THREE ESSAYS ON ORGANIZATIONS' PROACTIVE ENVIRONMENTAL STRATEGY IN CHINA

Thesis submitted in accordance with the requirements of the University of Liverpool for the degree of Doctor in Philosophy

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DECLARATION

This thesis is my original work and it has not been
submitted to any universities for any purposes.
I hereby declare that this paper is used for the purpose
of finishing the author's degree of doctor.
I take sole responsibility for this paper.

JANUARY 2021

ABBREVIATIONS

BT	**Business Ties**
CEO	**Chief Executive Officer**
CES	**Corporate Environmental Strategy**
CPC	**Communist Party of China**
CPPCC	**Chinese People's Political Consultative Conference**
CSO	**Chief Sustainability Officer**
CSR	**Corporate Social Responsibility**
EA	**Environmental Awareness**
ECA	**Environmental Cost-Benefit Awareness**
EM	**Environmental Manager**
EO	**Entrepreneurial Orientation**
ERA	**Environmental Risk Awareness**
ES	**Environmental Strategy**
ESI	**Environmental Sustainability Index**
FIE	**Foreign-Invested Enterprise**
GDP	**Gross Domestic Product**
GM	**General Manager**
GRP	**Gross Regional Product**
ISO	**International Organization for Standardization**
NPC	**National People's Congress**
OECD	**Organization for Economic Co-operation and Development**
OLS	**Ordinary Least Squares**
PES	**Proactive Environmental Strategy**
POE	**Private-Owned Enterprise**
PT	**Political Ties**
RBV	**Resource-Based View**
RES	**Reactive Environmental Strategy**

SOE	**State-Owned Enterprise**
TMT	**Top Management Team**
VIF	**Variance Inflation Factor**
WCED	**World Commission on Environment and Development Report**

ABOUT THE AUTHOR

Zhiwei Yan entered the full-time PhD programme in International Business School Suzhou (IBSS) at Xi'an Jiaotong-Liverpool University in April 2017. Prior to this, he obtained both Master's and Bachelor's degrees in Shanxi University, Taiyuan. From 2016 to 2017, he has been being an academic visitor in Manchester Institute of Innovation Research (MIOIR) of Alliance Manchester Business School at University of Manchester, funded by Shanxi Scholarship Council of China.

Zhiwei has also engaged in various teaching and research activities in IBSS. He has served as a teaching assistant taking the undergraduate courses 'Corporate Social Responsibility' and 'Strategic Management and Competitive Advantage'. Meanwhile he has presided a number of research projects including 'The Relationship between Sustainable Entrepreneurial Orientation and Resource-based Enterprises Transition in Shanxi Province' (July.2018-Jun.2019), 'Entrepreneurial Orientation and Resource-based Economy Transition in Shanxi Province' (Dec.2017-Jun.2019), 'Research on the Implementation of Six Supportive Policies for the Development of Private-Owned Enterprises in Shanxi Province—Based on Grounded Theory' (July.2019-Sept.2019), 'The Routine of High-Quality Development of Private-Owned Enterprises in Shanxi Province: From the Perspective of Social Value Co-creation' (July.2018-Aug.2018). All these programmes are to some extent related to the topic of his PhD dissertation.

Apart from the three core papers involved in PhD thesis, zhiwei also achieved another two publications entitled 'Is Entrepreneurial Orientation A Good Predictor of Sustainable Performance?' (*Journal of Asia Entrepreneurship and Sustainability, 2018*), as well as 'Ties Diversity with Knowledge-Intensive Business Services and Manufacturing Firms' Service Innovation' (in Chinese) (*Studies in Science of Science, 2018*). Zhiwei has actively presented parts of his work in PhD seminar, and currently he is working on another article "Uncovering the black box: A realistic framework for managing corporate environmental strategy".

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ABSTRACT

This thesis builds upon three separate papers that focus on investigating antecedents of organizations' proactive environmental strategy (PES) in the context of China. The first study presents the differential incentives for the proactive environmental strategy (PES) in China, including case companies with three different ownerships. Analytic induction applied to data collected from 10 case firms revealed the key motivation for private-owned enterprises (POEs) is executives' long-term orientation, while guanxi with local government incentivizes the provincial state-owned enterprises (SOEs) to conduct PES, in contrast to the competitive motivation for PES in another SOE affiliated to state-owned key enterprise. The foreign-invested enterprises (FIEs) adopt the PES driven by a diverse set of motives. Specifically, ecological responsibility has been greatly identified as the salient motives in favor of two foreign firms' PES, in opposition to another FIE's adopting PES which is merely motivated by competitive advantage. Furthermore, by comparing with prior studies, the differences include (1) whether the positive impact of competitiveness on firms' PES built on the premise of possessing ecological responsibility, and (2) whether political ties (referred to *guanxi* in China) act as a driving force for provincial SOEs' and the barrier for POEs' PES.

The second study, drawing on upper echelons theory, investigates the direct impact of two dimensions of managerial environmental awareness (EA) on proactive environmental strategy (PES), and the moderating role of three individual dimensions of firms' entrepreneurial orientation (EO), namely, innovativeness, proactiveness, and risk-taking, in the main relationship. Our empirical results, based on a sample of 228 Chinese manufacturing firms, show that both of the two dimensions of EA, namely, environmental risk awareness (ERA) and environmental cost-benefit awareness (ECA), are positively and significantly related to PES, and that the positive relationship between ERA (ECA) and PES is strengthened (weakened) for firms with high levels of innovativeness and for firms that are less oriented towards risk taking. Unexpectedly, the results reveal that the interaction between proactiveness of EO and the two dimensions of EA does not significantly influence the PES. These findings

suggest that there are multiple types of complex cognition within organizations, and greater attention paid on both individual and organizational cognitions are playing a critical role in favor of firms' PES.

Drawing upon social capital theory, the third study examines the effects of managers' political ties (PTs) on proactive environmental strategy (PES), and integrates the two dimensions of managers' environmental awareness (EA), namely, environmental risk awareness (ERA) and environmental cost-benefit awareness (ECA), as the contingent roles in this direct relationship. Using the data collected from 228 manufacturing firms in China, our findings indicate that the managers' PTs positively matter in firms' PES, and such a positive relationship between PTs and PES is strengthened (weakened) for those executives with higher ERA (ECA).

Keywords: Proactive Environmental Strategy; Entrepreneurial Orientation; Environmental Awareness; Environmental Risk Awareness; Environmental Cost-Benefit Awareness; Political Ties; Guanxi; Industry Peer; Chinese Manufacturing Firm.

INTRODUCTION

Global interest in proactive environmental strategy

Since the World Commission on Environment and Development Report (WCED) [1]of 1987 (known as the '*Brundtland Commission Report*') was published, corporate executives and management scholars have been struggling with the fringe questions of why and how companies need to integrate environmental concerning into strategic decision-making (Sharma & Vredenburg, 1998). Unlike the negative traditional role of organizations being the "*problem*" and the governments being the "*solution*", the Brundtland Commission Report coined the "*sustainable development*[2]" and poisoned a positive role of corporate in managing its relationship with the natural environment. Since then the business leaders and management researchers have increasingly turned their attention to the role of corporate environmental strategy (CES) in the repertoire of strategic management.

In choosing CES, firms confront a series of strategic approach portrayed along a continuum, ranging from reactive/remediation to proactive/prevention (Sharma, 2000; Sharma & Vredenburg, 1998). At one stance of the continuum, reactive environmental strategy (RES) merely conforms to regulatory requirements in the way of taking "end-of-pipe" pollution control solutions. Whereas proactive environmental strategy (PES), on the other extreme, is a corporate approach which implies the anticipation the future environmental requirements and trends, and the alternation of the firm's operations to prevent rather than to reduce adverse environmental impacts (Aragón-Correa, 1998; Sharma, 2000; Sharma & Vredenburg, 1998). Hence, it could be argued that the firms striving to sustainable development are inclined to formulate and implement a PES (Aragón-Correa & Sharma, 2003; Sharma & Vredenburg, 1998). Examples of PES include ISO14001[3] certificate (Christmann & Taylor, 2001), resources recycling and

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[1] World Commission on Environment and Development (WCED), *Our Common Future* (Brundtland Commission Report), Oxford University Press, New York, 1987.

[2] Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. (WCED, 1987)

[3] ISO14001 is short for International Organization for Standardization 14001, the international environmental management system standard.

application of renewable resources (Fryxell & Lo, 2003), the development of eco-friendly products/services/process (Klassen, 2001), implementing eco-technological innovations (Berrone & Gomez-Mejia, 2009) and environmental policies (Henriques & Sadorsky, 1999), application of benchmarking and accounting procedure (Nash & Ehrenfeld, 1997), setting the objectives of environmental performance and disclosing environmental information (Hart, 2005), performing environmental audits, training employees in pro-environmental activities, and linking employee compensation to the environmental performance (Welford, 1998).

In light of above pro-active and preventive measures, the purpose of PES is thus to create wider value for both shareholders and multiple stakeholders through ensuring effective environmental protection (Darnall, Henriques, & Sadorsky, 2010). However, few companies have shown a willingness to integrate environmental concerns at such proactive/highest level (Banerjee, 2001), only if they have a better understand of the motives and benefits of the PES. As the accurate knowing of the motives behind any strategy is particularly significant for the successful strategy formulation (Hitt, Ireland, & Hoskisson, 2016), and the distinct level of CES occurred within the firms depending on managerial perceived importance of environmental issues, corporate managers ought to preciously understand why they had better conduct a PES before this strategy could be developed in the best approach. In other words, to motivate more PES among firms, we must firstly know "*why*" and "*how*" some firms take more proactive stances while other counterparts lag behind.

Since the most salient question of what drives firm strategic actions has always occupied a central position in the strategic management literature (Nadkarni & Barr, 2008), the organization and the natural environment scholars thereby have been in the significant efforts to broadly examine '*why*' and '*how*' firms should engage in PES over past two decades. Concretely speaking, several studies have answered such two core questions from the resource-based view, institutional theory, stakeholder theory, dynamic capability theory and upper echelon theory and so forth, contending that the environmental regulations/rules from government (Powell & DiMaggio, 2012), the primarily perceived importance of stakeholders norms (Henriques & Sadorsky, 1999), the concerning of community (Banerjee, Iyer, & Kashyap, 2003), organizations' focus on customers, competitors, and technologies (Schmitz, Baum, Huett, & Kabst, 2019)

as the macro-level factors of PES. Centering on the individual-level, top managers' mindsets (Flannery & May, 2000), and leadership (Egri & Herman, 2000), managerial interpretations of environmental issues as opportunity rather than threat (Sharma, 2000), environment attitudes (Cordano & Frieze, 2000) and managers' business ties (Jiang, Wang, Zhou, & Guo, 2020) have been evidenced as the micro determinants in prompting firms' PES. Moreover, an empirical study drawing on resource-based view proposes the interaction effect of firms' entrepreneurial orientation (EO) and intensity of government regulations on organizations' PES adoption (Menguc, Auh, & Ozanne, 2010).

To date, various disciplines have provided distinct theories and paradigms for exploring PES antecedents (Etzion, 2007) at different levels and in various context (Sharma & Sharma, 2011). However, causing the worldwide scholarly interests, the Western developed countries geographically dominants the environmental proactivity studies (Delmas & Toffel, 2008) by employing data from Western businesses. Since the effectiveness of corporate strategy depends on the specific environment (Sharma, 2000), and environmental management is not a universal prescription or a one-size-fits-all method (Barnett, 2007), the national context is thereby of greater importance as the contingency (Matten & Moon, 2008) for PES studies. Consequently, it is no surprising that governmental regulations, stakeholder norms, and the mindsets of managers have different effects on PES between China and Western society (Liu, Guo, & Chi, 2015). Thus it can be seen that the national context might cause antecedents to differently impact a firm's pursuit of PES. Along with this thought, it is worthwhile and interesting to examine the factors that influence firms' PES in developing regions, like China, as the largest emerging economy in East Asia and world's second largest economy (Ye & Zhang, 2011).

Proactive environmental strategy and the context of China

Despite the increasingly scholarly interests in investigating the motives of PES, there is a scarcity of research centering on the context of China. Under the contrasting contexts of Western countries and China, the key drivers of PES in Western firms might not adequately represent the same phenomenon of Chinese businesses.

First, the dominant predictors drawing from institutional- and/or stakeholders perspectives mainly focus on exogenous drivers (Delmas & Toffel, 2004), such as the government regulations and stakeholder norms. These two perspectives largely over-emphasize the isomorphic effects that all corporates respond to, and lack the clarity of the specific mechanism that how decision makers input the subjective interpretation of external pressures into the focal firms. This is because the way how the corporates respond to external pressure is derived from the managerial interpretations regarding information inputs (Peng & Liu, 2016). Moreover, of particular significance is the more complete and perfect environmental regulations in Western countries (Escobar & Vredenburg, 2011), which strongly requires Western firms to abide by (Christmann & Taylor, 2001). Nevertheless, firms in China tend to lack the incentives to comply with environmental rules. Relatedly, an empirical study conducted by Wang, Wijen, and Heugens (2018) has found that the lack of enforcing mechanisms in Chinese local government, and the government officials' general priority of economic improvement over environmental issues hugely relaxed firms' environmental burden. Therefore, it can be proposed that both institutional and stakeholder perspectives might provide an extremely limited ability in explaining the internal motivation of firms' PES (Aragón-Correa & Sharma, 2003) since such scholarship placed huge emphasis on the powerful external pressures. Likewise, in less-developed countries, regulations and stakeholder demands have been recognized as less important drivers in relation to firms' PES (Beckman, Colwell & Cunningham, 2009). Moreover, in the Chinese context that potentially suffers from institutional voids, firms pursues a PES owning to powerful external pressures seems highly questionable. This is in line with Delmas and Toffel's (2004) argument that the institutional and macro-level perspectives cannot explain why firms involved in the same institutional pressures choose the different CES.

Second, apart from the dominant institutional and stakeholder perspectives, the bulk of scholarship drawing from the resource-based view (RBV) have suggested that firm-specific resources and capabilities (Aragón-Correa & Sharma, 2003) could drive firms' PES. However, such RBV scholarship heavily paid attention to organizational outcome by adopting PES rather than the adoption's antecedents (Chen, Lai & Wen, 2006) in the developed countries, contending that the development of capabilities is a result of conducting PES (Aragón-Correa & Sharma, 2003). More seriously, this lens

on PES adoption put more emphasis on internal valuable resources possessed by the focal firms, and equally regarded the presence of rare resources and core capabilities as their utilization in terms of firms' pro-environmental practices. In essence, using resources, referring to recent RBV studies, has been asserted to be contingent upon resource orchestration (Simon & Hitt, 2009) that managers need to proactively exploit.

Moreover, regarding the valuable resources and core capabilities in the firms, the organizations' boundary-spanning activities to a larger extent plays a critical role in developing the valuable resources and capabilities in a given situation. For instance, maintaining good relationship with suppliers, buyers and government officials (Peng & Luo, 2000) might be regarded as an important conduit on firms' core capabilities. Hence, social capital embedded in organizations drawing from RBV lens could be firmly viewed as a valuable, unique, and intangible resources leading to significant advantages (Tsang, 1998). Indeed, of particular interest in China where institutional void are prevalent, business leaders' good networking with politicians significantly affects the corporate strategy (Keim & Hillman, 2008), let alone the under-addressed firms' PES in this study.

In addition, beyond the market-related environment, firms are deeply embedded in the nonmarket environment consisting of social and institutional arrangements in terms of managing their interface with salient stakeholders (Porter & Kramer, 2002). Corporate social responsibility (CSR), in particular, has become one of the strategic approach for firms to differentiate themselves from competition and ultimately obtain the certain ends (Duanmu, Bu, & Pittman, 2018). In this scenarios, a growing number of firms are in a great effort to improve environmental performance, acting as a unique form of organization-level product differentiation device with the additional attribute attractive to the market (Bagnoli & Watts, 2003). As such, the instrumental CSR, a positivistic approach (Scherer, 2018), has been increasingly undertaken by corporates to enhance the firm performance (McWilliams & Siegel, 2001). Distinct from above means-end perspective of CSR, the political CSR also could strengthen the business-government relationship, especially in China where the government sits at the top of CSR pyramid. Therefore, issuing CSR report has been greatly laid the emphasis in China (Marquis & Qian, 2014). More significantly, appointing the chief sustainability

officer (CSO) in the top management team (TMT) could increase firms' CSR actions (Mattern & Moon, 2008).

Furthermore, it has been well-argued that firms are more likely to mimic industry peers' behaviors in face of environmental uncertainty. In this vein, when some of the leading corporates adopt PES, other firms in the same industry are prone to conduct the same behaviors (González‐Benito & González‐Benito, 2006), since most firms tend to use social comparison as the basis for decision-making (Haunschild & Miner, 1997). Empirically, Yang, Wang, Hu & Gao (2018)'s initial work documented that the number of listed firms would positively impact both RES and PES in the nonlisted firms, wherein the superior performance of listed firms largely motivates the PES for those nonlisted firms.

Third, since firms can be seen as an organization of human resources, the firms' adoption of PES is thereby a part of consciously chosen strategy resulting from the decision makers' conscious assessment of options (Ransom & Lober, 1999). Hence, the engagement in PES is an outcome of choices made by executives that possess the power and managerial discretion to shape the environmental conduct (Bansal, 2003). In line with recent call for microfoundations of corporate sustainability (Aguinis & Glavas, 2012) and the individual-level factors are capable of informing firms' PES adoption (Papagiannakis, Voudouris, & Lioukas, 2014), extant studies proposed the individual-level factors such as managerial belief and values that positively motivate firms' PES. Most notably, since managers are inclined to devise business strategies based on their cognition (Gavetti, 2005), and organizational profiles to a higher degree demonstrate the characteristics and processes of executives (Hambrick & Mason, 1984), these studies largely explore the endogenous factors of top managers, like their background and personalities. By using demographic data as proxies for representing managerial cognition, researchers have not detailed the mechanism of how managerial cognition influences environmental decision-making.

Overall, insights about determinants of PES adoption in China are critical. Given that firms in China, as in most developing countries, engage in PES despite relatively weak pressures from external environmental forces, this study attempts to provide an alternative explanation of PES adoption by examining the internally driven motives.

Gaps, objectives and research questions

Along with aforesaid arguments, the prior limitations of predicting PES that this study aims to deal with are expressed in the following perceived gaps. An immediate gap observed in the Chinese context is a lack of in-depth investigation regarding the motivators in favor of firms' PES. Hence, the first objective of this study is to examine the differential incentives for PES adoption from our multiple case companies. In seek to address this gap, there is a need for a qualitative research pointing to the research question as:

What motivates firms' proactive environmental strategy in China? A qualitative study from top managers' views

Followed the first study, a quantitative research investigates the direct impact of two dimensions of managerial environmental awareness (EA), namely managerial environmental risk awareness (ERA) and environmental cost-benefit awareness (ECA), on firms' PES adoption. Moreover, as previous studies on this subject paid little attention to the constraints imposed by organizational cognitive paths, which referred to the factor like strategic orientation. Strategic orientation is characterized by futurity, proactivity and risk-taking of a firm, which equips firms to adopt PES. Entrepreneurial orientation (EO), however, is pronounced as a firm-level strategic orientation consisting of innovativeness, risk-taking, and proactiveness (Miller, 1983). A most cited research from Aragón-Correa and Sharma (2003) highlighted that the approach to prevent pollution need to be incorporated into entrepreneurial features of the firm. This represents that firms are not likely to pursue PES unless they encourage the entrepreneurial activity. In order to fulfil this objective, the second research topic is proposed as:

Top managers' environmental awareness and proactive environmental strategy: The moderating role of entrepreneurial orientation

Regarding the significance of managers' political networking with governmental officials, the third study mainly examines the direct effect of political ties (PTs) on

PES. Moreover, because the value of ties is contingent on special contextual factors, this study makes a further step to integrate two dimensions of managers' EA, namely ERA and ECA, into the analysis. Driven by this objective, the third research topic is developed:

Top managers' political ties and proactive environmental strategy: The moderating role of environmental awareness

Key constructs in this thesis

Proactive environmental strategy

CES is the corporate strategy that a firm carried out to deal with its relationship with natural environment (Aragón-Correa & Sharma, 2003; Sharma, 2000). Several research on CES has provided various classifications, indicating that firms' response to environmental issues varied along a continuum (Agarwala, 2005). Specifically, the work from Hunt and Auster (1990) has identified five typologies of the environmental programs, evolving from "beginner" to "proactivist". Building on the resource-based theory of the firm, Hart (1995) developed a more grounded typology of CES in terms of four environmental approaches: the end-of-pipe approach, pollution prevention or total quality management, product stewardship, and sustainable development. A most cited work from Sharma and Vredenburg (1998) classified CES into a continuum that ranges from reactive to proactive, which was similarly represented as a continuum aligned with reactive, defensive, accommodative and proactive strategy (Henriques & Sadorsky, 1999). By its very definition that CES is a firm's selection of the width and depth of environmental-friendly practices and activities, four types of a CES was suggested as reactive, focused, opportunistic and proactive strategy (Lee & Rhee, 2007).

As abovementioned, numerous classifications of CES have been outlined in the previous studies. Referring to Aragón-Correa (1998)'s indication, such these schemes are built on the continuum ranging from reactivity to proactivity, which acts as a well-formulated and broadly-utilized scheme set forth in the studies. Nevertheless, some authors have criticized this scheme, arguing that firms might adopt reactive positions in face of environmental threats, whereas take advantages of PES at certain moments

(Gonz á lez - Benito & Gonz á lez - Benito, 2006; Kolk & Mauser, 2002). However, in spite of differences in terminology, the typology of CES applied in this thesis relies on the Sharma (2000)'s continuum that ranges from reactive to proactive. The reactive environmental strategy (RES) responds to changes in environmental regulations and stakeholder pressures by means of defensive lobbying and passive adoption of an end-of-pipe pollution control approaches (Aragón-Correa & Sharma, 2003), while a PES reflects a pattern of voluntary environmental initiatives beyond the compliance with environmental regulations through altering firm operations, processes, and products to prevent negative environmental impacts (Aragón-Correa & Sharma, 2003; Sharma & Vredenburg, 1998).

Given the potential of PES to alleviate the negative effects of business activities on natural environment, organizational theorists and practitioners have paid greater attention to figure out the factors that prompt firm's pursuit of PES (Sharma & Sharma, 2011). One stream of research dominantly emphasizes the governmental regulations (Clemens & Douglas, 2006) and stakeholder pressure (Buysse & Verbeke, 2003) as motives of firms' PES. Another body of studies investigates the endogenous drivers of corporate PES at organizational and individual levels. The organizations' focus on customers, competitors, and technologies (Schmitz et al., 2019), institutional pressure, business performance improvement, business practices and market pressure and benefits (Vishwakarma, Nema, & Sangle, 2018), and organizational capabilities (Aragón-Correa & Sharma, 2003; Sharma & Vredenburg, 1998) at the organizational level, and the individual level factors including managers' mindsets (Flannery & May, 2000) as well as leadership (Egri & Herman, 2000), managerial interpretations of the environmental issue as opportunity rather than threat (Sharma, 2000), environment attitudes (Cordano & Frieze, 2000) and managers' business ties (Jiang et al., 2020) have been associated with organizations' PES adoption.

In addition, several studies has observed the realized outcomes of PES, including cost reduction, efficiency and productivity improvement (Ambec & Lanoie, 2008; Hart, 1995), legitimacy enhancement (Bansal & Clelland, 2004), the development of new market opportunity and easier accessing to the markets (Ambec & Lanoie, 2008), and differentiated products (Porter & Van der Linde, 1995b).

Environmental awareness

The individual concern has been argued as the key motivation for environmental responsiveness (Bansal & Roth, 2000). It is thereof expected that those who are aware of environmental issues and are concerned about the impact of their businesses on the natural environment are more likely to reduce the impact of their business activities. Environmental awareness (EA), which represents human being's consideration and knowledge of the impacts of the businesses on the environment, is a prerequisite for acquiring the idea of environmental protection (Chen & Lou, 2003). Thus it is notably regarded the EA as the initial step in motivating human being to solve environmental problems (Ramsey, Hungerford, & Volk, 1992). Individuals with higher EA are more likely to conduct an environmental-friendly manner (Sekhokoane, Qie, & Rau, 2017). Previous studies have indicated that EA acts as a key predictor of pro-environmental behaviors in relation to environmental responsibility or practices (Qu, Liu, Nayak, & Li, 2015), and the green/environmental/ecological innovation (Gadenne, Kennedy, & McKeiver, 2009; Hillestad, Chunyan, & Haugland, 2010; Peng & Liu, 2016; Yu, Sun, & Chen, 2019),

EA is inherent in human nature, whereas the concept first becomes formalized in the late 1960s (Roth, 1992). Since then, numerous studies have attempted to interpret its exact meaning, which is yet to be reached because interpretations depend greatly on individual ideology. Although managers' EA has been suggested as a key predictor of pro-environmental behaviors (Qu et al., 2015), a number of extant studies generally manifest EA as a single dimensional construct. Such defined approach to identify EA have limitations as it could capture only a part of this construct. Due to the complexity of human being's cognition, EA, as conceptualized in recent studies, ought to be the multi-dimensional construct.

Referring to Gadenne et al. (2009)'s initial work, EA is explicitly divided into a general awareness and an awareness of costs and benefits related to the environmental issues. Based on the foregoing study, an empirical study adopts two categorizes of EA as the moderator in the relationship between environmental practices and sustainable development performance of Chinese eco-industrial park projects (Qu et al., 2015). Reliance on these insights triggers the further classifications of the term EA in Peng and Liu (2016)'s study, which explicitly categorizes the EA into environmental risk

awareness (ERA) and environmental cost-benefit awareness (ECA). Specifically, the former ERA reflects the extent to which executives are conscious of firm's negative impacts on the natural environment, implying the ethics and morality of executives in respect to dealing with business-natural environmental interface. The ECA, grounded by self-interest, demonstrates the managers' recognition of potential cost reduction and/or profit improvement by means of environmental initiatives.

Obviously, EA, a special managerial cognition, has been suggested to encompass two dimensions rather than being a single dimensional construct (Gadenne et al., 2009; Peng & Liu, 2016). However, because managers tend to devise strategies derived from cognitions and perceptions (Gavetti, 2005), where the managerial attention has been focused on (Kaplan, 2011). Hence, these two distinct dimensions of EA respectively illustrate how managers perceive the corporate negative impacts on the environment, and their prediction of potential economic outcomes via environmental practices. By this very manifestation, this study strives to adopt EA's two sub-dimensions, namely ERA and ECA, into the analysis in seeking to provide a holistic consideration of EA.

Entrepreneurial orientation

Entrepreneurial orientation (EO), generally portrayed as a strategic posture, has become one of the most built constructs in entrepreneurship and broader management research (Wales, 2016). Although the historical roots of EO could be dated back to the works from Khandwalla (1977) and Mintzberg (1973), it was until Miller (1983)'s foundational publication that provided much needed clarity to management scholars. In this initial work, Miller (1983) conceived of EO as the simultaneous exhibition of three sub-dimensions, namely innovativeness, risk-taking, and proactiveness. Among them, innovativeness refers to a tendency to engage in creativity and experimentation through the introduction of new products/services, thereby deviating from established practices (Lumpkin & Dess, 1996), risk-taking involves engaging in high-risk actions with chances of high returns, and also taking bold activities in uncertain environments (Covin & Slevin, 1989), and proactiveness refers to an opportunity-seeking, forward-looking behavior that characterized by the introduction of new products and services ahead of rivals and acting on future needs (Rauch, Wiklund, Lumpkin, & Frese, 2009). Miller states:

> *In general, theorists would not call a firm entrepreneurial if it changed its technology or product line ... simply by directly imitating competitors while refusing to take any risks. Some pro-activeness would be essential as well. By the same token, risk-taking firms that are highly leveraged financially are not necessarily entrepreneurial. They must also engage in product market or technological innovation (p.780).*

Building on Miller (1983)'s insights, a large stream of research has addressed the concept of EO accompanying with several ongoing ontological questions (Anderson, Kreiser, Kuratko, Hornsby, & Eshima, 2015). For example, the two predominant but diverging conceptualizations of EO have emerged[4] (Covin & Lumpkin, 2011). One dominant conceptualizations conceived EO as a unidimensional construct that EO can be regarded as a sustained firm-level attribute represented by the singular quality that innovativeness, risk-taking, and proactiveness have in common (Covin & Slevin, 1989; Miller, 1983). The second is a multidimensional conceptualization based on the Lumpkin and Dess (1996)'s view of EO as a set of independent dimensions with each owns the respect effect. Recent theorizing posits such two conceptualizations can co-exist in line with Covin and Lumpkin (2011)'s suggestion:

> *Both conceptualizations of the EO construct can lead to theoretically and practically significant contributions to the EO knowledge base, and no compelling need to encourage the adoption of one EO conceptualization at the expense of the other (p.863).*

As both conceptualizations are unquestionably legitimate (Covin & Miller, 2014), and responding to the recent call that the individual dimension of EO has a different association with other variables (Kreiser & Davis, 2010; Kreiser, Marino, Kuratko, & Weaver, 2013), our study takes a formative view of EO in examining the differentiated relationships between each sub-dimension and other key variables.

Furthermore, several meta-studies have suggested the positive and direct linear effect of EO on firm performance (Rauch et al., 2009). However, this direct linearity seems both spurious and ambiguous that should be questioned (Andersén, 2010) due to the complexity of "*performance*" as a multi-dimensional concept (González-Benito

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[4] In the work of Covin and Wales (2012), they assert that "Overall, one might say that the Lumpkin and Dess's (1996) conceptualization of EO is more domain-focused – that is, it specifies where to look for EO – whereas the Miller (1983) conceptualization of EO is more phenomenon-focused – that is, it specifies what EO looks like (p.681)."

& González-Benito, 2005). As stated, the term "*sustainable development*" coined by WECD and the vital role of managers postulated in reaching this goal thereof catalyze a paradigm shift in today's business. In this case, the new image of EO should convert to sustainable performance[56] that includes financial and non-financial performance (Yan, Cao, Dong, & Han, 2018). On the other hand, the direct association of EO and business performance is an over-simplification (Rauch et al., 2009) and little is known about the casual configuration of EO and other variables (Wales, Gupta, & Mousa, 2013), such as business strategy (Rauch et al., 2009; Wales et al., 2013).

Regarding a PES, the main focus of this thesis, it reflects a pattern of pro-active actions, preferences, and decision-making involving in voluntarily managing the business-the natural environmental interface (Sharma & Vredenburg, 1998). Thus in nature, the PES seems as entrepreneurial, innovative, and risky as it extends beyond environmental laws (Darnall et al., 2010; Sharma, 2000). Based on these assumptions, managers' receptivity regarding pollution prevention will increase when firms possess more of an EO (Menguc et al., 2010) as their upper echelons.

Political ties[7] (Guanxi in China)

Nonmarket strategy literature has generally declared that corporate executives may become political active with the purpose of obtaining the favorable public policy (Hillman & Wan, 2005), particularly in developing and transition economies. During times of transitional change, managers are likely to rely on network-based strategies, informal ties, and relational governance mechanisms, such as *guanxi* in China, to construct substitutes for the absent or weak formal institutions (Peng, Sun, Pinkham, & Chen, 2009), which is characterized as so-called institutional voids. However, when

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5 This argument is originated from the Author's one published article titled "*Is Entrepreneurial Orientation A Good Predictor of Sustainable Performance?" in* Journal of Asia Entrepreneurship and Sustainability, 2018, 14(3), 124-165.

6 By gliding sustainability into the mainstream areas of EO, the Author's study re-conceptualizes the EO in light of sustainability and advance the new image of EO as the good predictor of sustainable performance instead of financial performance.

[7] Political ties (PTs) involve interlocking ties formed through formal personal service of senior managers as government and political officials or vice versa, and informal ties such as managers' social relationships with politicians and bureaucrats. In this study, I focus on the informal ties rather than formal interlocking ties.

examining the role of networking in such an institutional void context, the mainstream research primarily centers on the managerial political ties (PTs) with governmental officials and regulatory entities (Faccio, 2006; Peng & Luo, 2000).

Managerial PTs, defined as the executives' boundary-spanning activities and their interpersonal connections with governmental officials in industrial bureaus and supporting organizations like tax bureaus, state banks, and commercial administration authorities (Peng & Luo, 2000). Better networking with politicians and governmental officials, because of its own strengths of reducing uncertainty and transaction costs, managing resource dependencies, and offering preferential access to information and policy influence (Lux, Crook, & Woehr, 2011), has been greatly valued and actively cultivated by executives as an effective means of coping with institutional voids. In China, ties are the deeply ingrained institution over 5,000 years (Li, Poppo, & Zhou, 2008), and ties with political actors have led to a unique type of relational outcome named *guanxi*. *Guanxi* is a unique characteristic of Chinese society (Davies, Leung, Luk, & Wong, 1995), involving the "drawing on a web of connections to secure favors in personal and organizational relations" (Park & Luo, 2001). Therefore, *guanxi* has been regarded as the lifeblood of business transaction in China (Boisot & Child, 1996).

Moreover, the performance effects of managerial PTs has attracted an increasing attention in both strategic management and organizational literatures. Several research findings have suggested the importance of PTs to firms survive (Faccio, Masulis, & McConnell, 2006), firms' financial returns and market value (Hillman, 2005) and firm performance via enhanced legitimacy (Hillman, 2005). The most cited work from Peng and Luo (2000) indicates that PTs could lead to the organizational growth and performance in China. In addition, close ties with political actors could also facilitate firms' collaborations with universities or institutions serving as critical channels for the acquisition of advanced knowledge and core technologies in Chinese firms (Zhang, 2006). Ties may also provide intangible benefits such as influencing policies and rules (Lester, Hillman, Zardkoohi, & Cannella Jr, 2008), facilitating market entry (Agrawal & Knoeber, 2001), and hindering competitors' entry (Dean & Brown, 1995).

However, social network theory cautions that ties are not always advantageous (Li et al., 2008). A burgeoning stream of literature has disclosed the "dark side" of the PTs in transition economies (Sun, Wright, & Mellahi, 2010). That is, the PTs is able

to yield not only opportunities, but also act to constrain firms (Okhmatovskiy, 2010). For example, in order to obtain resources, managers must undertake the governmental interference on employment (Sheng, Zhou, & Li, 2011) by compelling firms to hire unqualified or poorly-skilled employees in important posts (Chung, 2011). Reliance on PTs may also severely block a firm's information flow due to the frequent position changes and rotations of political affiliates (Tsang, 1998). Furthermore, seeking-rent behaviors can be attributed to the political pressure exerted by governmental officials (Faccio, 2006), and the shortage of common shared interest between executives and their connected politicians also has a negative influence on strategic management and firm performance (Sheng et al., 2011). Additionally, PTs are costly to establish and maintain (Boubakri, Cosset, & Saffar, 2008), and time consuming (Fan, 2002).

Furthermore, the effectiveness of ties has been assumed to be contingent on some important contextual factors, such as firm ownership (Park & Luo, 2001), industrial growth (Peng & Luo, 2000), and market forces (Li et al., 2008). An empirical research conducted by Li et al. (2008) showing that managerial PTs positively affect domestic firms' performance, whereas the effect is curvilinear for foreign firms. Also the heavy utilization of PTs would decrease the profitability of foreign firms in China (Li, Zhou, & Shao, 2009). Additionally, PTs studies, although insightful, further need to examine its impact on business strategy (Zhu & Chung, 2014), given the fact that managers' political connections could impact the firms' strategic decisions (Zhou, 2013), and networking with governmental officials is firmly believed to influence organizations' strategic choices (Peng & Luo, 2000).

Structure of this thesis

This dissertation consists of three separate articles pertaining to the antecedents of organizations' PES adoption.

First study/Chapter1 sets out to explore the key success determinant/antecedent for a firm's pursuit of PES in the context of China, by utilizing the quantitative method, semi-structured interview with top manager/environmental manager/CEOs in ten case firms. Contrary to quantitative methodology, multiple-case study has been ensured to have its unique advantage of "getting closer to constructs and being able to illustrate causal relationship more directly" (Siggelkow, 2007). Moreover, the data collected

through a qualitative approach could unveil the hidden information in participants' mindsets, as the exploratory study is carried out in a natural state without intervention and manipulation. Of particular referring to Ashley and Boyd (2006)'s review on the methodology adopted in environmental management studies, nearly two-thirds works (most of '*Management*' and '*People*' studies) depend on social surveys and interviews for the data collection[8]. As falling within '*Management*' and '*People*' scopes, utilizing the qualitative method in our study is well suited for addressing the motivations of participants related to PES.

Aligned with this presume, this study identified the ten participants depending on theoretical considerations (Miles & Huberman, 1994), and those respondents are intentionally sampled (Creswell John, 2007). Moreover, the selection of participants is based on convenience (Robinson, 2014) and the usage of multiple-case study could increase the validity and generalizability of robust findings (Eisenhardt & Graebner, 2007). Primary data from telephone/wechat/ face-to-face interview in Cantonese, and secondary data gathered from corporate public documents, like public issued reports, environmental reports, policy declarations, news report and website, are both used to offer a holistic picture of PES. The interviews were all taped-recorded and transcribed, and follow-up phone call with corresponding informants was conducted if there is missing data.

We conducted a qualitative study of the motivations in driving PES in China, involving firms with three different ownership. Analytic induction applied to data indicated that the key motivation for private-owned enterprises (POEs) are managers' long-term orientation, whereas the guanxi with local government incentivized the provincial state-owned enterprises (SOEs) to adopt PES, in contrast to the competitive motivation for PES in another SOE affiliated to state-owned key enterprise. The salient motives for two foreign-invested enterprises (FIEs) has been identified as the individuals' ecological responsibility, in opposition to another FIE driven by competitive advantage. By comparing with prior studies, the differences include (1)

[8] "The key outcome of this study is that nearly two-thirds of the research examined relied on social surveys and interviews to collect data; that is, most of the '*Management*' and all of the '*People*' studies, while '*Economic*' studies, traditionally associated with a rational perspective, also witnessed a very high proportion." (p.76)

whether the significantly positive impact of competitiveness on firms' PES with the premise of being motivated by ecological responsibility firstly, and (2) whether the political ties (called guanxi) is beneficial for firm's PES in China.

Second study/Chapter2 carries on examining the direct impact of ERA and ECA, two dimensions of managers' EA (Gadenne et al., 2009; Peng & Liu, 2016), on firms' PES, and the moderating effects of three dimensions of EO, namely, innovativeness, proactiveness, and risk-taking. Relying on managerial and organizational cognition theory (Kaplan, 2008; Kaplan, 2011; Walsh, 1995), executives' cognitive or mental systems would influence their attention focus on and the subjective interpretation of business environment, and impact their response to external environmental changes. In addition, given the fact that organizational cognition plays an essential role in affecting environmental decision making (Sharma, 2000), this study integrates firms' EO, a firm-level strategic orientation in pursuit of the strategy making practices, managerial philosophies, and entrepreneurial nature of corporate behaviors (Anderson, Covin, & Slevin, 2009), as the moderators between ERA/ECA and PES, in form of three independent dimensions, innovativeness, risk-taking, and proactiveness.

Regarding PES, it is regarded as a pattern of pro-active activities, preferences, and decision-making in managing business-natural environment interface (Sharma & Vredenburg, 1998). Thus it could be assured that PES is entrepreneurial, innovative, and risky as it goes beyond what is required by environmental regulations (Darnall et al., 2010; Sharma, 2000). Hence, the interplay of EA and EO in explaining firms' PES seems to be reasonable and, in doing so, we theoretically and empirically contribute to the environmental management literature by examining how the two dimensions of EA facilitate firms' PES, and identifying whether the impact of EA on PES will be strengthened or weakened under varying conditions with different levels of EO's three dimensions. The empirical results based on a sample of 228 Chinese manufacturing firms, show that both of the two dimensions of EA, ERA and ECA, are positively and significantly related to PES, and that the positive relationship between ERA (ECA) and PES is strengthened (weakened) for firms with a higher level of innovativeness and for firms with a lower level of risk taking. Unexpectedly, the interaction between proactiveness and ERA (ECA) does not significantly impact PES. The findings also indicate that there are multiple types of complex cognition within organizations, and

the consideration of both individual and organizational cognitions is significant in firms' PES.

Third Study/Chapter3 investigates the effect of top managers' political ties (PTs) on PES, and integrates the two activators, ERA and ECA of top managers' EA as the moderators into the above relationship. To provide a holistic view of PTs, this study systematically analyzes the both positive and negative effects of PTs in relation to the PES in response to competing theories (i.e., "helping hand/bright side" or "grabbing hand/dark side").

Moreover, although researchers and practitioners contend that PTs matter, less addressed is their contingent value (Gulati & Higgins, 2003). In line with the argument that the effectiveness of ties might be contingent on crucial contextual factors (Li et al., 2008), this study further regards ERA and ECA, two distinct dimensions of EA (Gadenne et al., 2009; Peng & Liu, 2016), as the PTs' contingency, which is inspired by the significance of managers' cognition, and underlying values in influencing the organizations' strategy (Hambrick & Mason, 1984). The empirical study based on a sample of 228 Chinese manufacturing firms revealed that managers' PTs could significantly and positively affect firms' PES, whereas the ERA positively moderates the relationship of PTs and PES, and ECA plays a negative moderating role in such relationship.

Scope of this thesis

As aforesaid earlier, the majority of PES studies has tend to investigate Western societies (Delmas & Toffel, 2008), and the antecedents of PES might be different in China versus Western countries, because of its distinct institutional context and less-developed national business systems (Chan, 2005). In addition, as the second largest economy and largest emerging market in the world, China, is of particular interest (Ye & Zhang, 2011) due to the paucity of study on environmental responsibility related to tremendous economic growth (Gao, 2009). Moreover, there is not a one-size-fits-all approach in environmental management. Thus, China undoubtedly provides an ideal context to explore the antecedents of PES aligned with our first research topic.

In second study, China is chosen as the research context background. First, the Chinese government has advocated the development of "green economy", realizing a

severity of environment condition and the protective responsibility of ecosystems. In the central government's 13th Five-Year Plan for Economic and Social Development in 2016–2020, protecting environment has been among six priority tasks, the "Green Concept" is involved in Five Development Ideas, and 16 environmental projects are shown in the 100 Dominant Projects of the Five-Year Plan. Moreover, building and practicing the idea of "*lucid waters and lush mountains are invaluable assets*"[9] was further facilitated in the "Report to the 19th Communist Party of China National Congress"[10]. The nation has expressed the determination to work with international community to realize the 2030 Agenda for Sustainable Development and build a clean and beautiful world, as the partial content from the congratulatory letter for ecological forum[11] sent by President Xi:

> *"China highly values ecological and environmental protection," the president said. "Guided by the conviction that lucid waters and lush mountains are invaluable assets, the country advocates harmonious coexistence between humans and nature, and sticks to the path of green and sustainable development."*

Second, entrepreneurship, as the vehicle of economic and societal transformation, could be viewed as an effective approach for resolving the global problems (Drucker, 1986). In China, the entrepreneurship has been firmly appealed as the key motivation for entrepreneurs to participant in the ecological civilization construction, which is sustained by entrepreneurs' sense of nation[12] and corporate social responsibility (CSR). Third, the new regulations clearly demand listed firms on the Corporate Governance Index and Shenzhen Stock Exchange 100 Index to issue CSR annual reports, and now numerous corporates voluntarily provide the reports (Wei, Shen, Zhou, & Li, 2017). As a result, business managers, such as Pony Ma, the leader of Tencent, are taking part in various environmental programs like China Pingan's Low Carbon Action. In

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9 "Lucid waters and lush mountains are invaluable assets" is translated into "*绿水青山就是金山银山*" in Chinese.

10 The 19th Communist Party of China National Congress was opened in 18th October, 2017.

11 Chinese President Xi Jinping has sent a congratulatory letter to the Eco Forum Global Annual Conference Guiyang 2018, which opened in the capital of southwest China's Guizhou Province in 7th July, 2018.

12 The "*sense of nation*" is translated into "*家国情怀*" in Chinese.

light of these arguments, the context of China would help to better understanding the role of top managers' EA in pursuit of a firm's PES.

It is no doubt that China presents an important yet idiosyncratic setting to study the PTs. First, ties are deeply ingrained institution in China over 5,000 years (Li et al., 2008), and national economic activities are tightly embedded in the networks and ties of interpersonal relations (Uzzi, 1997). Being a special form of business-government relationship, managers' PTs play a significant role in helping reducing the uncertainty and transaction cost, obtaining the governmental assistance (Li et al., 2008), managing the resource dependency and influencing the policy (Lux et al., 2011). As such, most managers to refer to ties as 'lifeblood' of business transactions (Xin & Pearce, 1996). Second, China has not become free markets yet (Zhang, Qi, Wang, Zhao, & Pawar, 2019) because of less predictable and clear rules for market competition (Hoskisson, Eden, Lau, & Wright, 2000). In this situation, cultivating ties with political actors has been highly valued by Chinese entrepreneurs aiming to substitute for missing formal institution and to achieve preferred outcome. Third, environmental issue has become the dominant topic on the political agenda in China Yuan, Bi, and Moriguichi (2006). Government at various levels have been setting various regulations and market-based approaches to encourage entrepreneurs to implement environmental practices (Lo & Fryxell, 2005). As such, China, a government-dominated transitional economy with severe environmental problems, offers an ideal quantitative case in the third study.

Chapter 1: What Motivates Firms' Proactive Environmental Strategy in China? A Qualitative Study from Top Managers' Views

Abstract: We conducted a qualitative study of the motivations in driving proactive environmental strategy (PES) in China, involving firms with three different ownerships. Analytic induction applied to data collected from 10 case firms revealed the key motivation for private-owned enterprises (POEs) is executives' long-term orientation, while guanxi with local government incentivizes the provincial state-owned enterprises (SOEs) to conduct PES, in contrast to the competitive motivation for PES in another SOE affiliated to state-owned key enterprise. The foreign-invested enterprises (FIEs) tend to adopt PES motivated by a more diverse set of drivers. Ecological responsibility has been identified as the salient motives in favor of two foreign firms' PES, in contrast to another FIE merely motivated by competitive advantage. By comparison with prior studies, the differences include (1) whether the positive impact of competitiveness on firms' PES should be built on the premise of being primarily motivated by ecological responsibility, and (2) whether the political ties (referred to guanxi in China) act as the driving force for provincial SOEs' and the barrier for POEs' adoption of PES.

Keywords: Proactive environmental strategy; Guanxi; Industry peer; Competitiveness.

Introduction

The efficient mitigation of environmental burden heavily requires corporates to utilize proactive environmental strategy (PES) to prevent the negative environmental impacts (Aragón-Correa & Sharma, 2003). As such, investigating "*why*" firms should proactively manage its business-natural environment interface has gained attention in the management literature over past two decades (Sharma & Sharma, 2011). Broadly, this "*why*" question has been answered in terms of institutional-, organizational-, and individual-level motives through the lens of various theories and paradigms (Etzion, 2007), contending the government-enforced regulations (Powell & DiMaggio, 2012), stakeholder norms (Darnall et al., 2010; Henriques & Sadorsky, 1999), organizational capability (Aragón-Correa & Sharma, 2003; Sharma & Vredenburg, 1998), as well as the concerning of local community (Banerjee et al., 2003) as the macro-level drivers, and the individual determinants such as managers' mindsets (Flannery & May, 2000) and leadership (Egri & Herman, 2000), managerial interpretations of environmental

issues as opportunity rather than threat (Sharma, 2000), and managers' business ties (Jiang et al., 2020). Besides, the interplay of firm's entrepreneurial orientation (EO) and governmental regulations' intensity was proposed in Menguc et al. (2010)'s work.

Although greater effort has been making to answer the '*why*' question, such an impressive amount of studies to predict the PES is limited. In particular, most studies shed light on Western societies (Delmas & Toffel, 2008), which does not absolutely reflect the firms' PES in developing countries. We speculate that a well examination on PES and its antecedents in various institutional contexts is significant given that global environmental problems ask for contingent approaches. In fact, the profiles of national culture are firmly believed to affect the corporate strategic decisions (Franke, Hofstede, & Bond, 1991) as an influential contingency for both strategy formulation and implementation (Mattern & Moon, 2008). Focusing on PES, the national context has been suggested to impact the managers' environmental attitudes and values (Park, Russell, & Lee, 2007). Examples of its importance are the greater variation of ISO 14000's diffusion across countries (Corbett & Kirsch, 2004), and the findings from Liu et al. (2015)'s study, implying that top managers' mindsets, stakeholders norms, and government regulations generate different effects on PES between China and Western countries. Along with this premise, we predict the investigation of PES and its antecedents in distinct contexts is critical given the fact that traditional culture and historical factors are able to explain the PES differences (Li & Peng, 2008).

As aforesaid, it is meaningful to investigate why firms favor PES in non-western countries. Since research on contingencies is of significance in the environmental management field (Schmitz et al., 2019), therefore, regarding the national context as a vital contingency would enable us to better understand whether previously identified predictors of PES remain effective in other regions. To enrich the "*why*" answers, this study chooses to address the above research topic in China, the world's second largest country along with increasing significance in global economy (Ralston, Egri, Stewart, Terpstra, & Kaicheng, 1999). The reasons for choosing this nation as our study setting are as followed. First, Western societies and China have extremely distinct cultures that might impact the PES and its antecedents (Liu et al., 2015). Specifically, Chinese dialectical thinking possesses three principles, consisting of "change (the universe is constantly changing), contradiction (two ostensibly opposite propositions can be both

true), and holism (everything in the universe is connected)" (Peng & Nisbett, 1999), Western dialectical thinking, conversely, is prone to be synthetic, emphasizing "the law of identity (everything must be identical to itself), non-contradiction (the same thing cannot be both true and false), and the law of the excluded middle (everything is either true of false)" (Peng & Nisbett, 1999). Thus it can be seen that those two types of cognitive mode are extremely different. Second, China has under-developed and incomplete environmental regulations (Li & Peng, 2008), while the majority of Western firms adhere to the stringent and well-developed environmental legal systems that strongly affect the environmental behaviors (Christmann & Taylor, 2001). Third, in terms of Chinese culture, it is no surprise that the Confuciansim, one of traditional cultures, has largely affected business decision making (Ip, 2009). The concepts nurtured by Confuciansim, such as "*Morality and Profit*" (义利) and "*Worshipping the Mean and Valuing the Harmony*" (尚中贵和), are in line with China's ecological civilization and the methods for business survival. Therefore, Confucianism, to some extent, would have an invisible impact on environmental decision making, which is dubbed as "corporate social responsibility (CSR) with Chinese characteristics". Lastly, there does not exist a universal prescription and a one-size-fits-all approach in the realm of environmental management (Barnett, 2007). And a hallmark of transition economies is the coexistence of state-owned enterprises (SOEs) and nonstate-owned enterprises. Of particular interest in China, SOEs' managers are inclined to fulfill the government expectation in contrast to those of nonstate-owned enterprises, such as private-owned enterprises (POEs) and foreign-invested enterprises (FIEs). Taken together, China is an ideal research context for our study.

In addition, in light of exploratory nature of this research topic, and in accordance with the call from Ashley and Boyd (2006) that "nearly two-thirds of environmental management research centered on '*management*' and '*people*' relied on social survey and interviews to collect data", this study applies the qualitative approach via semi-structured interviews with top manager/environmental manager/CEOs from 10 cases in China as this study embracing '*management*' and '*people*'. Multiple-case study is an exploratory approach carried out in a natural state without any intervention and manipulation. Thus, it could be worthwhile to offer a holistic view of PES in China.

Notably, this study is a timely research as it provides the insights into the driving forces of PES in case companies with different ownership. Moreover, we try to clarify how those observed motivations differ among various samples. Comparing our results with those found in prior studies, the differences and similarities would be further discussed.

The remainder of the study is as follows. First section reviews a piece of extant literature. The second section presents the research methodology and qualitative data analysis. The interview results will be discussed in next section, followed by the cross-case comparative analysis and the comparison between our derived motivators and antecedents suggested in prior studies. The final section draws the main conclusions, limitation and future studies.

Literature Review

Increasingly negative effects of business on the environment has urged managers to develop corporate environmental strategy (CES) (Aragón-Correa & Sharma, 2003), to deal with business-natural environment interface (Sharma, 2000). However, firms' CES could be reactive and proactive (Agarwala, 2005; Sharma, 2000). Firms focused on sustainable development are more likely to adopt PES (Aragón-Correa & Sharma, 2003) to prevent negative environmental impacts (Aragón-Correa, 1998) rather than merely control the pollution. Examples of PES consist of ISO 14001 (Christmann & Taylor, 2001), resources recycling and utilizing renewable sources (Fryxell & Lo, 2003), developing environmental-friendly products and processes (Klassen, 2001), initiating eco-technological innovations (Berrone & Gomez-Mejia, 2009), executing environmental policies (Henriques & Sadorsky, 1999), utilizing benchmarking and accounting procedure (Nash & Ehrenfeld, 1997), setting environmental performance goals and disclosing the information (Hart, 2005), auditing environmental condition, organizing employees training of pro-environmental behavior and linking employee compensation to environmental performance (Welford, 1998).

What motives firms' PES? It is critical to understand why some firms adopt PES while others are not willing to. Indeed, scholars have paid a great deal of attention on investigating PES antecedents guided by different theories and paradigms (Aragón-Correa & Sharma, 2003; Etzion, 2007) (**See Table 1.1**).

Institutional-level antecedents of PES

Business actions are notably embedded in a network of stakeholder relationships. Stakeholders, defined as "any group or individual who can affect or is influenced by firms' goals" (Freeman, 2010), is classified into primary and secondary groups. Primary stakeholders, due to its direct stake in the firms (Donaldson & Preston, 1995), positively react to firms' environmental actions through filing suit against the way managers are doing business (Darnall et al., 2010). Whereas the corporate buyers and suppliers are inclined to echo by cancelling purchase or selling agreements, stopping delivery of raw materials, or seeking other substitutes. Inside the firms, employees in favor of environmental protection tend to seek positions or continue the employments (Henriques & Sadorsky, 1999). In a case of showing dissatisfaction is to engage in the public whistle-blowing to expose firm's omitted environmental practices (Henriques & Sadorsky, 1999).

Indirect involving in commerce transactions (Mitchell, Agle, & Wood, 1997), secondary stakeholders comprises of public interest group, such as environmental and community organizations, labor unions, and industry associations (Etzion, 2007), and environmental regulators who are powerful to launch legal requirements and inspect firms' compliance with stringent laws (Fineman & Clarke, 1996). Thus, under these scrutinization (Hart, 1995), firms ought to improve their reputation and maintain legitimacy through transparent communication.

Moreover, institutional pressure is also regarded as a main motive underlying the adoption of PES (Buysse & Verbeke, 2003). In most studies, governments-enforced laws and rules have been suggested to exert potential control on firm's PES (Powell & DiMaggio, 2012). Firms abiding by environmental regulations protect themselves from political risks, particularly when their offenses are costly (Berrone, Fosfuri, Gelabert, & Gomez‐Mejia, 2013). For example, Chinese government and Western authorities would incentivize proactive environmental protection (Liu et al., 2010) to stimulate the firms' adoption of ISO 14001 certificate.

What's more, different regulation systems also play a significant role in affecting the antecedents of PES. That is, managers commonly have different cognitions toward environmental protection due to different regulation effects (Cordano, Marshall, &

Silverman, 2010). In comparison with Western societies' environmental regulations systems (Escobar & Vredenburg, 2011), China's regulatory system is less-developed (Chan, 2005) accompanying with lower environmental standards and imperfect regulations (Christmann & Taylor, 2001). Some Chinese firms that meet international requirements often employ more PES contrasting with others that meet local standards.

Organizational-level antecedents of PES

The organization and the natural environment research have broadly figured out several capabilities that prompt firms' PES. Specifically, these capabilities includes organizational learning, shared vision, cross-functional integration, strategic proactivity, and constant innovation (Aragón-Correa, 1998; Christmann, 2000; Hart, 1995; Sharma & Vredenburg, 1998). Organizational learning, a fundamental way to develop inner capacities related to competitive advantage (Bontis, Crossan, & Hulland, 2002), has been to be in supportive of PES through cross-functional knowledge transferring. Firms with a strategic proactivity capabilities are inclined to develop processes and routines in order to capture new opportunities (Aragón-Correa, 1998). Besides, collaborating with multiple stakeholders in seeking effective way to handle environmental problems could help firm to develop PES (Hart, 1995).

In addition, from resource dependence theory, the director interlocks with firms providing knowledge-intensive business services are positively associated with PES adoption (Ortiz-de-Mandojana, Aragón-Correa, Delgado-Ceballos, & Ferron-Vilchez, 2012) relying on an empirical study of US electric firms. In another study using the samples from larger firms, it has indicated that larger-sized enterprises are more likely to choose the PES (Aragón-Correa, 1998).

Individual-level antecedents of PES

Extant studies that examine the determinants of firms' PES predominantly adopt an institutional or stakeholder perspective (Céspedes-Lorente, de Burgos-Jiménez, & Álvarez-Gil, 2003; Delmas & Toffel, 2004a; Rueda‐Manzanares, Aragón‐Correa, & Sharma, 2008). These studies over-stress the significant role of stakeholder's norms, however, firms' reacting to external pressure is derived from managerial interpretation of inputting signals (Peng & Liu, 2016). Along with premise, neither institutional nor

stakeholder perspective could satisfactorily explain the internal driving forces for firms' PES (Aragón-Correa & Sharma, 2003). This is well evidenced in Sharma and Vredenburg (1998)'s empirical study showing a variety of CES among 99 firms in the same institutional context. In line with argument that institutional and macro-level perspectives cannot explain the different strategies chosen by firms in the same institutions (Delmas & Toffel, 2004a), studies transferring from macro to micro-level would make us accurately grasp the behavioral drivers behind the environmental strategies (Papagiannakis et al., 2014).

With respect to PES, top manager's personal attitude toward natural environment is influential in response to environment issues (Williams & Schaefer, 2013). Relying on Value Belief Norm theory, personal attitude and moral norms is stressed as the key motives of pro-environmental behavior (Cordano & Frieze, 2000; Stern, Dietz, Abel, Guagnano, & Kalof, 1999). Moreover, managers possessing environmental strategic mindsets are likely to adopt PES (Flannery & May, 2000; Marshall, Akoorie, Hamann, & Sinha, 2010) and favor firms' PES (Lin & Ho, 2011). The reflection of managers' environmental leadership (Egri & Herman, 2000), manager's interpretation of this issue (Sharma, 2000), and their business ties (BTs) (Jiang et al., 2020) are beneficial for firms' PES pursuit.

Apparently, multiple works have suggested diverse motivations of PES, coupling with a higher percentage of studies in Western countries (Delmas & Toffel, 2008). By contrast, few individual-level factors consisting of ecological motivation, managers' BTs, managerial interpretation of environmental issues, and family ownership and internal environmental training on the organizational-level have been indicated as the predictors of firms' PES in China (Dou, Su, & Wang, 2019; Jiang et al., 2020; Liu et al., 2010; Walker, Ni, & Huo, 2014; Yang, Wang, Zhou, & Jiang, 2019). With this premise as a reference, there is a growing need for studying environmental strategy in various contexts (Kang & Lee, 2016) like China as an emerging market.

However, firms in emerging market often lack incentives to comply with the environmental regulations due to weak governmental capacity. In a qualitative study conducted in China, Wang et al. (2018) found that the lack of enforcing mechanisms in local government and the priority of economic development over environmental protection by governmental officials hugely relaxed the environmental burden on the

firms. Thus it can be implied that the institutional and macro-level perspectives cannot satisfactorily explains the internal drivers for firms' PES in the emerging market. In response to Delmas and Toffel (2004)'s call, institutional perspective cannot explain why firms subject to the same institutional context choose different environmental strategies. Therefore, given that firms in emerging market engage in PES despite from the external environmental forces, scholars have recently argued that investigation at the individual level would allow us to better understand behavioral drivers that inform the environmental decision making of key players (Papagiannakis et al., 2014).

Furthermore, prior research argues that the engagement in PES, a result of choice made by managers, is driven by their attitudes towards the natural environment (Ervin, Wu, Khanna, & Wirkkala, 2013) because managers tend to devise strategies based on their cognition and perception (Gavetti, 2005). However, managers' cognition is of significance in face of uncertainty and managers are more inclined to make sense of ambiguous signals from the environment. Sensemaking portrays the process by which managers, in face of uncertainty and ambiguity, develop subjective representations of firm's environment that allow them to construct strategic choice and subsequent firm actions (Gioia & Chittipeddi, 1991). With respect to PES, it clearly reflects how top managers perceive the importance of environmental protection and balance the costs and benefits of adoption environmental initiatives. Along with this thought, this study largely conducts the in-depth interview with executives in seek to explore the drivers of firms' PES in China, which is better aligned with the emerging research stream that calls for paying attention to the microfoundations of corporate sustainability (Aguinis and Glavas, 2012).

Table1.1 The antecedents of PES in reviewing articles

#	*Author(s)*	*Country*	*Method*	*Industry*	*Antecedents*	*Journal*
1	Henriques and Sadorsky (1996)	Canada	Questionnaire	largest firms Manufacturing sector	Customer/shareholder/regulatory neighborhood/community pressure	*Journal of Environmental Economics and Management*
2	Sharma and Vredenburg (1998)	Canada	Interview	7 firms Oil/gas industry	Organizational capability	*Strategic Management Journal*
3	Sharma (2000)	Canada	Questionnaire	99 firms Oil/gas industry	Managerial interpretations of environmental issue as opportunity	*Academy of Management Journal*
4	Egri and Herman (2000)	Canada USA	Questionnaire Interview	38 for-profit organizations 33 nonprofit environmentalist organizations	Leadership	*Academy of Management Journal*
5	Bansal and Roth (2000)	UK Japanese	Interview	53 firms	Competitiveness Legitimation Ecological responsibility	*Academy of Management Journal*
6	Buysse and Verbeke (2003)	Belgium	Questionnaire	197 large polluting firms Chemical/food/textiles sectors	Stakeholders pressure	*Strategic Management Journal*
7	Anton, Deltas, and Khanna (2004)	USA Non-USA	Questionnaire	S&P 500 firms	Liability threats Consumer/investors/public pressure	*Journal of Environmental Economics*
8	Marshall, Cordano, and Silverman (2005)	USA	Interview	19 managers Wine industry	Personal attitudes and subject norm Local regional and community association Command-and-control mechanisms	*Business Strategy and the Environment*

Table 1.1 The antecedents of PES in reviewing articles (Continued)

#	*Author(s)*	*Country*	*Method*	*Industry*	*Antecedents*	*Journal*
9	Sharma, Aragó n - Correa, and Rueda - Manzanares (2007)	North American European	Questionnaire	372 Skiing resort sectors	Organizational capability	*Canadian Journal of Administrative Sciences*
10	Darnall et al. (2010)	Canada USA France Germany Hungary Norway	Survey by Organization for Economic Co-Operation and Development (OECD)	4188 Manufacturing sector	Company Size Stakeholder pressure	*Journal of Management Studies*
11	Menguc et al. (2010)	New Zealand	Questionnaire	325 firms Multiple industry	Interaction between entrepreneurial orientation and government regulations intensity	*Journal of Business Ethics*
12	Liu et al. (2010)	China	Questionnaire	132 firms	Viewing environmental issues as opportunities Internal environmental training	*Journal of Environmental Management*
13	Sharma and Sharma (2011)		Theoretical framework	Family firms	Attitudes towards environmental preservation Subjective norms regarding firm as a vehicle Perceived behavior control regarding ability to build firm's capabilities	*Business Ethics Quarterly*
14	Aguilera-Caracuel, Hurtado-Torres, and Aragón-Correa (2012)	Spain	Interviews	1556 export SME Food industry	Environmental international diversification	*International Business Review*

Table 1.1 The antecedents of PES in reviewing articles (Continued)

#	*Author(s)*	*Country*	*Method*	*Industry*	*Antecedents*	*Journal*
15	Ortiz‐de‐Mandojana, Aragón‐Correa, Delgado‐Ceballos, and Ferrón‐Vílchez (2012)	USA	Quantitative	Electric firms	Director interlocks	*Corporate Governance: An International Review*
16	Aragón-Correa, Martín-Tapia, and Hurtado-Torres (2013)	27 countries	Hoover/ Amadeus database Interviews	164 pharmaceutical firms	Sharing information with employees Promoting employee collaboration	*Organization & Environment*
17	Singh, Jain, and Sharma (2014)	India	Questionnaire	104 firms Agricultural/chemical/manufacturing/servicing sectors	Holder ship/employees/commercial buyers and suppliers/services pressure	*Journal of cleaner production*
18	Walker et al. (2014)	China	Questionnaire	161 firms Multiple industries	Ecological motivation Regulatory stakeholder pressure	*Journal of Business Ethics*
19	Carballo-Penela and Castromán-Diz (2015)	Spain	Questionnaire	143 environmental consulting firms	Managers' attitudes towards sustainable development Short-term firm performance	*Business Strategy and the Environment*
20	Liu et al. (2015)	Western countries China	Meta-analysis	68 studies	Governmental regulations Stakeholder norms Managers' mindsets	*Management and Organization Review*
21	Pinzone, Lettieri, and Masella (2015)	Italy	Questionnaire	63 healthcare firms	Stakeholder pressure Employee commitment	*Journal of Business Ethics*

Table 1.1 The antecedents of PES in reviewing articles (Continued)

#	*Author(s)*	*Country*	*Method*	*Industry*	*Antecedents*	*Journal*
22	Ryszko (2016)	Poland	Computer-assisted interview	292 firms	Interorganizational cooperation Knowledge sharing	*Polish Journal of Environmental Studies*
23	Yang, Wang, Hu, and Gao (2018)	China	Questionnaire	1391 nonlisted firms	Superior performance of listed firms	*Business Strategy and the Environment*
24	Yang et al. (2019)	China	Questionnaire	935 listed firms	Managers' perceived business and social pressures	*Journal of Business Ethics*
25	Dou et al. (2019)	China	Questionnaire	454 private firms	Family ownership	*Journal of Business Ethics*
26	Schmitz et al. (2019)	German	Web/electronic/mail survey	349 energy sector	Customer/competitive/technological orientation	*Organization & Environment*
27	Tatoglu et al. (2020)	Turkish	Questionnaire	519 firms Multiple industries	Customer-focus Differentiation strategy pursuit Subject to greater strategy-oriented Stakeholder focus	*British Journal of Management*
28	Jiang et al. (2020)	China	Archival data Questionnaire	190 hotels	Business tie	*International Journal of Hospitality Management*
29	Seroka‐Stolka and Fijorek (2020)	Polish	Questionnaire	180 firms Food/chemical/fuel/energy industry	Regulators/competitors/clients/NGOs/media/shareholders/employees pressure	*Business Strategy and the Environment*

Methodology

There is a general divide between two methodological approaches available for utilization by scholars, namely, qualitative and quantitative methods. However, quantitative method is restricted to the set of concrete items or stalemates designed by the researcher (e.g. rating their agreement to prescribed statements numerically). In contrast to this method, qualitative research, a typical kind of exploratory study, tend to utilize researcher as the tool to explore social phenomenon in the natural situation. Thus it can be seen that such kind of approach encourage the participants to provide rich responses and facilitate a deeper investigation of the issue by means of asking less pre-defined and open-ended questions (Biggerstaff, 2012).

The core characteristics of qualitative research can be regarded as the in-depth study conducted through field investigation, open interviews, participatory and non-participatory observation, case exploration, and other approaches. In environmental management field, a number of studies, such as case studies conducted by Lawrence and Morell (1995) examining proactive environmental management. In terms of our research topic, since it mainly focuses on the "*why*" question, and the aim is to seek for answers to the "*why*" questions from personal interviewing with key participants. In addition, our exploratory research obviously falls into '*management*' and '*people*' in the environmental management field that could adopt social survey and interview to collect data (Ashley and Boyd, 2006). Moreover, single case study possibly leads to some potential biases like misjudging the representativeness of a single event (Tversky & Kahneman, 1986), and inevitably exaggerates the salience of a datum due to its ready availability, multiple-case approach is thus beneficial for guarding against observer biases.

Taken together, this study applied an interview-based multiple-case approach, which appears as the most suitable methodology for addressing the "*why*" questions (Pratt, 2009). Case study, an empirical inquiry contemporary phenomenon in its real-life contexts, especially when phenomenon-context boundaries are not evident (Yin, 2017), is thus the logical approach for this study (Leonard-Barton, 1990). In the meantime, due to its unique advantage of being closer to constructs and able to build direct and causal relationship (Siggelkow, 2007), case study could provide a holistic view of the invisible information rooted in respondents' mindsets. Moreover,

this approach can generalize robust findings in contrast with single one (Eisenhardt & Graebner, 2007).

Samples

The criteria of selecting participants is generally driven by theory itself rather than statistical sampling (Miles & Huberman, 1994). In theoretical sampling, cases are selected to highlight theoretical issues and to refute of challenge the theory being tested. To ensure the logic and coherence (Miles & Huberman, 1994), we adopt a purposive approach reflecting all respondents are intentionally selected (Creswell John, 2007). Choosing participants built on convenience is also legitimate for our study (Robinson, 2014). Key informants include general managers/environmental managers/CEOs who are responsible for strategic decision-making. Seeking to achieve our research aims, the questionnaire is designed to understand drivers for adoption of PES in firms, clearly separating into two sections. The first part shows the profiles of participants as indicated in **Table 1.2,** and four questions around the topic in the second section (**See Appendix 1**).

Table 1.2 Profiles of participants

Code	Positions	Managerial experience (years)	Gender	Ownership	# of employees	Industry
Respondent 1	GM	20	Male	Private-owned	500	Chemistry
Respondent 2	EM	25	Male	Foreign-invested	2900	Semiconductor
Respondent 3	EM	15	Female	Foreign-invested	180	Printer
Respondent 4	EM	20	Female	Foreign-invested	4000	Processing
Respondent 5	EM	20	Male	State-owned	12000	Wine
Respondent 6	EM	7	Male	Private-owned	1400	Medicine
Respondent 7	EM	1.5	Male	Private-owned	1400	Bio-pharmaceuticals
Respondent 8	EM	15	Female	Private-owned	53531	Milk
Respondent 9	GM	32	Male	State-owned	679	Wine
Respondent 10	EM	16	Male	State-owned	2100	Active carbon

Notes: To preserve anonymity, the company names are not revealed.

GM=General Manager, EM=Environmental Manager.

This study also contemplated trying to identify environmental pioneers in the selected industries, which have proactively taken the lead in managing the business-

natural environmental interface. We conform to the following criteria. Firstly, they have issued annual environmental or sustainable development report. Secondly, they are the firms that possess wide national recognition in the environmental field. Finally, they adhere to ISO 14001 Norm as a reflection of environmental proactivity. Complying with three criteria, this study consists of cases belong to different sectors including chemistry, printing, wine, semiconductor, medicine and processing, and so on. Moreover, the selected firms consist of four POEs, three FIEs, and three SOEs.

Data collection

Primary and secondary sources of information are both used to in our study. For secondary data, sustainability/environmental reports, newspapers and journals, corporate public documents, and web pages were taken into consideration. These information served to confirm the reliability of the interviewees' responses. Primary sources as in-depth interviews through telephone/wechat/face-to-face, observation are utilized for identifying distinct motivators in each case company's PES. On average, each interview lasted approximately between two and three hours and was carried out in Cantonese. Anonymous survey and confidentiality were granted. Such technique provides a stronger validation of the results.

Data analysis

Data analysis followed multi-step as follows. First, the authors personally contact each participant through phone call, and demonstrate the chief purpose of interviews. Meanwhile, the interviewer place the emphasis on the authenticity of information from respondents. Second, the authors identify the interview time with key informants, and explain the information needs to be transcribed and handwritten. In addition, follow-up phone call would be conducted if few data were missing. Third, secondary data was collected and triangulated with data drawn from the interviews to enhance reliability. Lastly, first-hand summary was discussed with respondents to identify any misunderstanding.

Results

Two important themes in strategy management over the last 20 years have been the role of top management (Lewin & Stephens, 1994), and the strategic decision making (Rajagopalan, Rasheed, & Datta, 1993). Given that corporate managers are the producers of firms' strategies, the strategic decision making is not independent of managerial cognition and decision-making features (Dess, 1987). Meanwhile, how top managers define the strategy is highly related to the way they interact with strategy making. Aligned with this suggestions, the interviews have been initially conducted with the question of "How do you define PES?", and key factors will be identified through our in-depth interviews.

The meaning of PES

As we know, there is no consensus on the meaning of strategy among both scholars and practitioners (Markides, 2001). With regard to PES, it has been defined as intangible managerial routines and organizational innovations that require firms' commitments to improve environmental condition (Hart, 1995), or voluntary environmental practices as waste reduction and pollution prevention at its source (Aragón-Correa & Rubio-Lopez, 2007). Another definition from Liu et al. (2015) regards the PES as "firms' voluntary environmentally protective strategic plans and action arrangements going beyond requirements".

In reality, most respondents describe PES as the concept of "*circular economy*" (循环经济), which means the particular pollutants, such as solid, gas, water and other liquid wastes, might be re-utilized as the primary raw materials for the new products. Abiding by such idea, the so-called "*turn waste into treasure*" (变废为宝) could be eventually realized in reality. Moreover, proactive environmental practices could be viewed as an effective means of coping with business risk as respondent 1 suggested:

"It is no doubt that environmental issues have become a worldwide topic. In my opinion, the particular emission resulted from the current production process sometimes could be utilized as the raw material for the new product. Take CO_2 emission for example, such emission seems like the by-product in my company. However, my proactive decision is to intensively collect the CO_2 and further process it into dry ice (干冰), which is hugely demanded for the vegetables' and crops'

photosynthesis in greenhouse big shed (温室大棚). With such high concentration of CO_2, the crops will grow fast. In the end, we are able to achieve 'zero carbon emissions'." (Respondent 1)

Besides, numerous studies have classified the environmental strategy into the reactive strategies and proactive ones (Aragón-Correa, 1998). Nevertheless, some authors criticized this view by arguing that firms could adopt reactive strategies in face of environmental threats, and could take advantages of proactive postures at certain moments (Kolk & Mauser, 2002), as respondent 2 commented:

"In my mind, a firm's environmental strategy is a dynamic and complex process, which means there is no boundary between PES and reactive environmental strategy (RES) that bases on the compliance in the firm." (Respondent 2)

Motivators of firms' PES

Through in-depth interviews with key informants, they extensively provide the accurate motivation related to firms' PES adoption. Table1.3 summaries the coding findings arising from analysis of qualitative data.

Strategic vision

Given today's growing uncertainty, there is a current consensus that business direction is enhanced by strategic vision (Doz, Hamel, & Prahalad, 1989). In essence, strategic vision is an articulation by executives toward the organization's desired future and is integral to the strategic planning process (Bennis & Nanus, 1985). The advantages taken from strategic vision, particularly for firms involved in turbulent environment, have been assumed as offering '*sense of whole*' for business (Morris, 1987).

Paying attention to organizations' PES, the strategic vision is firmly assumed as an influential factor. Some respondents indicated that the environmental concerns should be the core part of business, which is required to be aligned with strategic vision. The following statements support this view:

"The environmental consideration on my organization's strategic level could contribute to 'build to last' (Collins, Collins, & Porras, 2005). In my mind, I am a forward-looking manager with the question 'how long the firm could survive' in the brain. Thus, my long-term orientation to some extent stands for the firm's strategic vision. Guided by such idea, the products standards always conform to the European Norms, including the environmental standard. As such, the project team in my company has to bear these in mind when starting a new product." (Respondent 1)

"It does have either reactive or proactive environmental posture in the firm. For our company, we adopt the PES in terms of wasted water, air, noise and solid wastes. Though it needs to hugely invest in environmental management, the development concept that 'our products are not backward in at least 10 years' encourages us to voluntarily initiate environmental measures going beyond the governmental regulations." (Respondent 6)

"In my company, our goal is to live longer for providing the cost-effective medicines for the patients. Thereby, we have been focusing on dealing with business-environment relationship. For example, in the realm of excretion of nitrogen and phosphorus, we always proactively carry on corresponding environmental policies, and has been keeping grasping the latest regulations. Thus it could be said that it is the strategic vision motivates us to do so." (Respondent 7)

"In 2007, our younger general managers primarily put forward the corporate sustainability and pointed out that 'social value is greater than economic value'. Since then, all the employees have been pursuing the concept of sustainable development, and our company was awarded the title of '2020 Best Practice for Sustainable Development' in 2020. Because of these merits, the socially responsible investors are willing to become our major shareholders, which is beneficial for long-term growth. In addition, only the terminology of 'sustainable development' is a universe language in the world, which can help to promote brand image and improve corporate reputation, and in turn enhance customer's perception of our products to the higher degree." (Respondent 8)

Furthermore, the strategic globalization layout adopted by parent company in host countries also probe the branches' environmental images. Multinationals are incentivized to generate environmental standards beyond governmental regulations (Christmann & Taylor, 2002). Thus, the application of advanced environmental

standard could reinforce a multinational's transparency, reputation and legitimacy (Dowell, Hart, & Yeung, 2000). This might be positioning the parent company as a "global company", according to statement of respondent 3:

"It was really appeared as an international company through the strategic globalization. Thus, we are responsible for building an environmental-friendly company in China, because other branches worldwide are in an effort to proactively cope with environmental degradation. Now, we are in the leading position among the entire industry peer firms." (Respondent 3)

Managerial cognition

The discipline of strategic management could be assured as a behavioral and cognitive science amongst its academic foundations (Frith & Tapinos, 2020). Along with this thought, some scholars have called to focus on the micro-level factors in exploring behavioral motives (Papagiannakis et al., 2014). That is, top managers' personal values and underlying belief are positively related to strategic choice and such a tendency confirms the statement that 'how firms react to natural environment depends on the way how managers predict it' (Peng & Liu, 2016).

However, although most executives assure the environmental management as an additional costs (Simpson, Taylor, & Barker, 2004), the competitive advantage generating from cost-benefit analysis is argued to significantly affect the firms' PES, from the explanation below:

"From the very beginning, we are inclined to bear in mind about the business. As protecting the environment seems as an externality that requires investments in many aspects, such as purchasing costs for cleaner material and technological appliances, and financial benefits resulted from invests are not obtained directly. In this situation, each time when we make environmental decisions, the cost benefit analysis is the first step, and only if the return on investment could be generally predicted that we would devote organization's resources to adopt PES. Take the water resource recycling as instance, in 2019, we installed the water reuse system in our manufacturing plant, with the achievement of 137 ton water saving every day and 50,000 tons water saving in the whole year. By doing so, we are able to develop the competitiveness relying on cost leadership or

cleaning products. More importantly, it is also beneficial for us to improve firm's reputation/image, which favor a more profitable exploring of marketing opportunities." (Respondent 2)

"Although my company is a state-owned enterprise, the proactive approach for dealing with environmental issues stems from the cost-benefit analysis, which means our measures in managing business-natural environment interface is aiming at reducing costs" (Respondent 10)

Likewise, the core value shared by the firm is more likely to play a crucial role in making business strategy. In our interview, the respondent 3 specifically explains firm's environmental protection system, including wasted recycling system, and re-manufacturing of consumable, laminating machines and accessories. Such proactive environmental activities derived from founders' corporate social responsibility management philosophy. With this guideline, numerous environmental indicators are wholly integrated into business performance assessment, such as energy using, discharged waste water, CO_2 emission, and recoverability rate of recycled resources. The notion from some respondents as followed:

"The values shared by the firm and often formulated in the firm's vision likewise play a role in affecting the strategy. Guided by our founder's CSR concepts, we integrate such an effective and operational thought into firm. Moreover, to ensure implementation effects, business performance assessment systems encompasses the larger portions of environmental performance indicators in our company. On this point, truly successful initiation of green change in our organization depends on the CSR organizational culture shaped by our founder." (Respondent 3)

"For any company, profit should come first. However, with respect to the environmental protection, we spend almost 6 million RMB last year on developing environmental programs. From this view, I would take greater pride in our kind-hearted business based on the benefits for future generations. For example, we insist on regularly developing the 5 years' Environmental Plan, and specify all the indicators related to pollution prevention, such as CO_2 emission, utilization rate of clean energy, and recycling of wasted water, and so on. Inside our factory, the solar streetlights have been installed and the garbage classification idea has been promoted toward not only ourselves but also the community, which goes ahead of the local governments' propose." (Respondent 4)

Guanxi with local government

In transition economies, such as China, network-based strategy has been highly recognized as a substitution for missing formal institutions in business. Reliance on close interaction between business and government is beneficial for helping firms obtain governmental assistance (Li et al., 2008), such as the environmental subsidy or the chance to design governmental policy. The following statement supports this:

"In our company, obtaining the environmental subsidy from government is no doubt to support the environmental management. Moreover, being affirmed as an environmental-friendly model firm, we enjoy greater opportunities in participating the environmental standards designing for the certain bureau, with purpose of improving general environmental condition in this industry." (Respondent 3)

"Poisoning ourselves as an environmental-friendly company, as you know, we spend almost 6 million RMB on implementing environmental programs in 2019. However, due to the connection with local government, the subsidy obtaining from government is of course able to alleviate financial expenses more or less." (Respondent 4)

"Because my wine company is state-owned, governed by local government. The leader's job career is tightly related to the environmental management. Thus, my firm is much more aware of the importance of environmental issues, and we have invested a lot in practicing environmental activities beyond compliance. For example, we have introduced a new environmental protective approach called 'Environmental Housekeeper' (环保管家), which refers to the advanced model of 'Third-party Environmental Pollution Control'. By doing so, we are seeking to establish industry benchmark accompanying with the outcome of leading position in environmental management domain across this regions. (Respondent 5)

"As a state-owned enterprise, we should naturally undertake the social responsibility as the forerunner or predecessor in various aspects like employment of promotion, protecting the environment and so forth. With respect to PES, we never keep a 'wait-and-watch' attitude due to our government places greater emphasis on sustainability in current era. " (Respondent 9)

Industry Peer

Business activity is involved in a connection of stakeholder relationships. It is common for firms to interact with industry peer when making decision, and their peer-firms in turn play a significant role in shaping a variety of corporate decisions (Chen & Ma, 2017). As such, respondent 1 absolutely agrees that industry peer plays a significant role in affecting a focal firm's PES. In particular, the peer firms are of great importance in the focal firm's investment decisions (Chen & Ma, 2017), such as the introduction of new product in chemistry industry. For example:

"In the chemistry industry, we do consider our two industry leading peers home and abroad. For me, I am always bound to pay an honored visit in those excellent enterprises, for the better understanding of production process and wastes disposed approach in peer firms. Specifically, before launching new products, information imperfection and being unsure of the likelihood of the environmental outcomes are the core considerations. In this scenario, the advanced experience in coping with environmental pollution from an excellent private peer firm would largely strengthen my own confidence in making invests into new products development." (Respondent 1)

Table 1.3 The coding process

Main category	**Corresponding subcategory**	**Exemplary quotation**
Strategic vision	Long-term orientation	*Environmental issue is part of the business, and should be placed on strategic level. (Respondent 1)* *Our product are not falling behind in at least 10 years. (Respondent 6)* *Our goal is to live longer for providing the cost-effective medicines. (Respondent 7)* *The socially responsible investors are willing to become our major shareholders, which is beneficial for long-term growth. (Respondent 8)*
	Globalization layout	*We need to conduct PES in China, because other branches worldwide are in an effort to proactively deal with the environmental issues. (Respondent 3)*
Managerial cognition	Ecological motivation	*We integrate founder's CSR concept into business. (Respondent 3)* *My company spend 6 million RMB in 2019 on environmental programs without caring about the economic returns. (Respondent 4)*
	Expected competitiveness	*When we make environmental decisions, the cost-benefit analysis is the first step, and unless the return on investment could be predicted that we would adopt PES. (Respondent 2)* *Our measures in managing business-natural environment interface is aiming at reducing costs. (Respondent 10)*
Guanxi	Networking with government	*Obtaining environmental subsidy from government is in favor of firms' PES. (Respondent 3/4)* *We have opportunities in participating the environmental standards designing for the certain bureau. (Respondent 3)*

		"Because the characteristic of my wine company is state-owned, which is governed by local government. The leader's job career is tightly related to the environmental management. (Respondent 5) *With respect to PES, we never keep a 'wait-and-watch' attitude due to our government places greater emphasis on sustainability in current era. (Respondent 9)*
Industry peer	Mimic peer firms	*I am always bound to pay an honored visit in excellent peers, for better understanding of production process and wastes disposed approach in their firms. (Respondent 1)*

Discussion

Cross-case comparative analysis

Motivators experienced by each individual case company are mapped out in Table1.4 to better compare the PES drivers across case companies. The table clearly presents that all the four POEs would adopt PES consistently driven by executives' long-term orientation. Good networking with local government has been suggested as the mere motivation for both two wine SOEs' pursuit of PES, in contrast to the state-owned case 10 motivated by expected competitiveness. As for FIEs, two cases of three regards the managers' ecological responsibility as the major driver, arming with the minor importance of guanxi with local government. Besides, the strategic globalization is also assumed as the influential factor in favor of printer firm's PES. Furthermore, interviewee from case company merely motivated by competitiveness expected that their pro-environmental behaviors led to the cost saving or improve the profitability.

Table 1.4 Cross-case overview of observed motivators

Case companies	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Ownership[a]	POE	FIE	FIE	FIE	SOE	POE	POE	POE	SOE	SOE
Industry[b]	Chem	Semic	Prin	Proc	Wine	Medi	Bio-p	Milk	Wine	Ac-c
Strategic Vision										
Long-term orientation	√					√	√	√		
Globalization layout			√							
Managerial motivation										
Ecological motivation			√	√						
Expected competitiveness		√								√
Guanxi										

Networking with government			√	√	√				√	
Industry peer										
Learning from peer	√									

a) POE is short for private-owned enterprise, FIE is short for foreign-invested enterprise, SOE is short for state-owned enterprise.
b) Chem is short for chemistry, Semic is short for semi-conductor, Prin is short for printer, Medi is short for medicine, Bio-p is short for bio-pharmaceuticals, Ac-c is short for active carbon.

As summarized, companies with different ownership experienced the various drivers for their PES. In light of above findings, long-term strategic orientation acts as the dominant predictor in favor of POEs' PES. As organizational strategic posture could be directly influenced by decision makers' preference point based on strategic reference point theory (Fiegenbaum, Hart, & Schendel, 1996), and of central in such theory is the "*time*" dimension (Fiegenbaum et al., 1996), the POEs therefore tend to inherently possess a long-term orientation due to their desire to pass on a healthy business to later generations (Brigham, Lumpkin, Payne, & Zachary, 2014). Four POEs' managers reported this: "My company is a typical family firm, and the long-lived mission prompts us to compete more on environmental issues beyond the price and quality, catering to the business trend worldwide." Thus, putting attention on building relationships with major stakeholders could help to create a positive future for private firms (Arregle, Hitt, Sirmon, & Very, 2007), adopting PES in sampled POEs is undoubtedly supported by business leaders' long-term strategic orientation.

Moreover, it is well-known that the SOEs, governed by Chinese government, tend to be operated by government intervention through controlling ownership and appointing managers (Zhou, Gao, & Zhao, 2017). Managers of SOEs are likely to seek not only business performance, but also the social objectives (Heath & Norman, 2004) in terms of social responsibilities (Van der Laan Smith, Adhikari, & Tondkar, 2005). Because environmental protection has been on the political agenda in China (Yuan et al., 2006), it is reasonable to assume that those SOEs would be in favor of PES motivated by their inherent networking with government, like the cases of two wine government-owned firms.

Surprisingly, company 10, also a typical SOE, has executed the PES driven by competitiveness rather than guanxi with local government. To further search its archival document, we found that this company is affiliated to a central government-

led enterprise. As we know, central governments possess broader nationwide rights and authority, compared with local governments in China. Hence, the differences in getting access to scare resources between local and central governments would lead to the heterogeneity in ties and outcomes for politically connected firms (Nee, 1992). Specifically, ties with central government, formulated at national level, is superior to the local ties formed at sub-national level such as provinces. In this scenario, such company, subsidiary of a certain national state-owned group, are likely to be more directed by central government, and indirectly takes advantage of the benefits from its head quarter's guanxi with central government. For such, it is perhaps useless to maintain guanxi with local government, as the environmental manager from case 10 expressed: "We only pay greater attention to the competitiveness through PES, and never consider the guanxi with provincial government officials."

In addition, our research also looked at the PES's determinants of FIEs located in China. The founder's ecological responsibility has been indicated as the dominant motivator of PES in case 3 and 4, arming with the slight significance of their good networking with local government. Firms motivated by ecological responsibility always pointed to a single individual who has championed the ecological responses (Bansal & Roth, 2000). As two respondents indicated, "It was the right thing to do from our top managers' standpoints." Thus the proactive environmental decision is based on the values of founder in printer firm and the director of processing case. In addition, the slight impact of guanxi on PES for these two firms is consistent with argument that foreign firms are less likely to utilize ties to the same extent that the domestic firm can (Li et al., 2008). Besides, the strategic globalization also plays a crucial role in promoting PES in case company 3.

Competitiveness, in contrast to ecological responsibility, resulted in the greater emphasis of the cost-benefit analysis of environmental proactivity. For example, the respondent from foreign case 2 echoed: "Once my firm could achieve the economic benefits or reduce the costs through proactive environmental activities, the inputs in environmental projects would be approved." Thus, firms motivated by competitive advantage overemphasized the concerns epitomized by phrases like "costs".

As noted, the data analysis suggested the main motivation for POEs is the long-term strategic orientation, the provincial SOEs' PES is derived from its guanxi with

local governments and the state-owned firm directed by national group places a huge emphasis on the competitiveness instead of guanxi with regional government when pursued PES. The salient motivation for two FIEs has been recognized as managers' ecological responsibility, which is different from competitiveness being another FIE's PES driver.

Comparative analysis with findings in prior literature

Given the better understanding of PES's antecedents in previous literature, as shown in Table 1.1, this part highlights the differences and similarities regarding the presence of influential factors of PES with those stand out in the extant studies.

Strategic vision

Greater uncertainty always accompanies with the outcomes of incorporating environmental practices into firms' decision-making (Sharma & Vredenburg, 1998). Hence, a firm is always required to have long-term orientation with respect to PES pursuit. The four POEs, being our samples, are consistently argued to favor the PES with the motivation of long-term strategic orientation. Indeed, compared with non-family-owned firms, family-owned enterprises have been largely believed to have a long-term temporal perspective (Anderson & Reeb, 2003). Moreover, the majority of Chinese private firms tend to have family involvement in ownership (Dou et al., 2019), and the four respondents from private-owned samples regard their firms as a kind of family firms, our interview findings are partially consistent with the result from an empirical work based on 454 Chinese private firms conducted by Dou et al. (2019). In this prior research, both long-term orientation and family commitment are recognized as the key elements for family ownership to exert influence on firms' PES (Dou et al., 2019).

Moreover, the motivation of strategic globalization highly emphasized by one FIE in our study is in consistence with an empirical study from Aguilera-Caracuel et al. (2012), indicating that the complex experience of environmental international diversification would positively influence firms' PES. This is probably because the multinational companies could benefit from knowledge transfer between different divisions and plants (Gupta & Govindarajan, 2000), and those corporates are also

inclined to meet the most stringent requirements prevailing in the relevant countries which causes the reflection of environmental proactivity in terms of systematic policies in many nations (Gonz á lez - Benito & Gonz á lez - Benito, 2006). Thus it can be seen that our interview findings largely correspond to the previous results.

Managerial motivations

The observed managers' ecological motivation in supporting PES of two FIEs points to a single individual who championed the ecological reaction. The printer company's green operation, for example, has been largely affected by its founder's CSR operational concept. In this case, its proactive environmental decision-making is built on the values of powerful individual, as the founder of our printer case. This is just in line with the argument that managers' psychological motivation is a driving force to firms' greener operation (Bansal & Roth, 2000). The individual concern for the natural environment, as indicated in two authors' work, has been illustrated as a source of ecological motivation the same as that of directors in our two case FIEs. Furthermore, a motivation arising from expected competitive advantage results in greater attention paid to the cost-benefit analysis of ecological responses, like the cases 2 and 10 in this study.

In sum, contrary to our interview findings, an empirical research, based on the sample of 161 Chinese firms, has indicated that executives' ecological responsibility is the critical predictor of firms' PES, whereas the competitive motivation could not be in favor of PES adoption (Walker et al., 2014). Therefore, it needs to be further examined whether the competitive advantage enables firms to adopt PES in China, and essentially, whether the ethical motivation and competitive advantage could be mixed or co-exist behind the proactive environmental actions of companies.

Guanxi with local government

Maintaining guanxi with local government has been found to be an important factor affecting two provincial SOEs' PES in our survey. In China, SOEs, governed by central or local governments, generally hold objectives diverging from simple profit maximization. Conversely, SOEs need to incorporate environmental quality into their own objective function, since environmental issue has been on the political

agenda in China (Yuan et al., 2006). Hence, it is the political ties (PTs), as so-called the Chinese guanxi that drives SOEs' pursuit of PES.

In contrast to China, the complete political, economic, educational, and labor system of Western countries would prevent executives from acting opportunistically rather than the objectives of managers in grasping political opportunities in China (Fryxell & Lo, 2003). It is reasonable that there is the scarcity of research examining the impact of PTs on PES in the West. However, an empirical work from Jiang et al. (2020) indicated that managers' PTs play a negative role in pro-environmental actions in Chinese hotels. A feasible explanation of the inconsistent findings is that the sampled cases' operations are directly and immediately affected by government intervention (Zhou et al., 2017), as the majority of Chinese companies involved in hotel industry are still be privately-controlled. Hence, those managers would limit their social activities with governmental officials at various levels to avoid inside trade.

In light of above analysis, managers' PTs act as the influential driver behind the PES in our two sampled SOEs, whereas it has been addressed to be the barrier for Chinese hotels' PES. Concerning about the executives' PTs, it generally consists of formal business-political ties such as senior managers serving officially in the governments, and the informal ties such as social relationship between politicians and business leaders (Siegel, 2007). Regarding the SOEs, their senior managers' PTs have been mostly developed through current or previous personal service in the governmental authorities, or through politicians currently or previously working as the senior managers in the firms. Thus it can be easily understood that the managers' PTs in SOEs is the good predictor of firms' PES in China. However, the boundary-spanning links between private firms and governments might be formed through the social relationships, such as the PTs that hinder the PES in Jiang et al. (2020)'s work. Hence, it is interesting to further investigate the role of informal PTs playing in the SOEs' PES pursuit. Additionally, due to the benefits that PTs could provide, it needs to extend the research scope to evaluate whether the PTs might motivate firms' PES or not.

Industry peer

Firms have been assured to mimic the behaviors of other organizations in the same industry. Surprisingly, the industry peer, as the significant factor, has been mostly overlooked in the extant PES studies (Yang et al., 2018). The main reason for this is derived from the difficulty to identify the peer in the certain industry and set out the analysis unit as well as level. However, the initial work from Yang et al. (2018) proposed that when the listed firms in a certain industry perform better, the nonlisted firms involving in the same industry would actively enhance the invests in PES. Hence, the interview finding from respondent 1 is partially consistent with the aforesaid result with respect to impact of peer firms on its own PES pursuit. This supports the claim that managers have greater willingness to use social comparison as their convinced basis in decision making process (Haunschild & Miner, 1997).

Nevertheless, the underlying intention behind the emphasis of the influence of industry peer appears the difference between our interview results and the previous findings. Specifically, when asked why the interviewee 1 working in chemical firm emphasizes the critical role of its industry peer, he indicated that it seems as the best means of reducing the trial and error costs in terms of environmental inputs. Notably, the prior work conducted by Yang et al. (2018) suggested that only the nonlisted firms would be proactively incentivized to adopt PES upon observing the superior performance of listed firms in the same industry. As a whole, it is worthwhile to answer the question of which driver, better business performance of peers or the reduction of uncertainty, influences the focal firms' choice of PES.

Conclusion

To promote firms' PES, previous studies have investigated the antecedents at different levels of analysis and in varied contexts (Sharma & Sharma, 2011). While a number of extant studies have a heavier focus on Western societies than on Asian countries (Delmas & Toffel, 2008). Moreover, there is no universe prescription or one-size-fits-all method in tackling environmental problem (Barnett, 2007). Thus it could be presumed that the antecedents of PES might be different between multiple countries. China, the world's second largest economy, presents an interesting setting to examine PES because of the need to balance its economic improvement with the tremendous environmental damage. The purpose of this study is to understand why

firms adopt PES by identifying motivations, and to illustrate the similarities and differences upon cross-case analysis and the comparison with prior findings.

Based on semi-structured interviews with 10 respondents, our results suggested the key motivation of adopting PES in private-owned firms is long-term orientation, whereas the guanxi with local government plays a crucial role in favor of two SOEs' PES. In contrast, the other one SOE affiliated to state-owned key enterprise places the greater emphasis on the competitiveness in terms of PES. The salient motivation for two FIEs has been recognized as the ecological responsibility, contracting to the competitiveness as the mere driver in another foreign firm. Moreover, guanxi with local government to a minor extent encourages the executives of two foreign firms to utilize PES in addition to their underlying ecological responsiveness.

Comparing our data with prior literature, the motivations observed in the case companies mostly correspond to the antecedents in the prior studies. However, the differences include (1) whether the significantly positive impact of competitiveness on firms' PES on the premise of being motivated by ecological responsibility firstly, (2) whether the political ties (called guanxi in China) is beneficial for SOEs' PES, while act as the barrier for POEs' PES adoption.

This study advances twofold contribution in PES studies. First, the utilization of first-hand accounts of key players in terms of PES adoption would shed light on practitioners' actual experiences about what determines their PES. For example, the identification of influential antecedents such as guanxi with local governments and industry peer would enrich the answers to the '*why*' questions. Second, comparing the motivators from the extant studies with the derived antecedents from specialized environmental-friendly firms in our multiple-case study, the comparison showed the motives generally corresponded well. Whereas the competitive advantage could be viewed as the individual factors in favor of a firm's PES.

Our study has important practical implications as well. First, managers' long-term orientation is significantly related to private-owned firms' PES. Therefore, for those leaders of private-owned or family business pursuing long-term development need to align environmental orientation to their values and visions salience. Second, as the industry peer play a critical role in affecting firms' PES, the environmental policymakers could encourage the leading or listed firms to go greener first, through

which the entire industry might become environmental-friendly. Third, although the motive of competitive advantage is related to one foreign corporation and a state-owned enterprise, it is therefore feasible for managers to regard PES as opportunity (Sharma, 2000). That is, managers could be inspired of seizing market opportunities from addressing environmental issue (Margolis & Walsh, 2003). Fourth, guanxi, a unique type of ties in China, has been argued as the sole determinant in our case of two wine state-owned enterprises. For those manages of nonstate-owned enterprises, two types of Chinese political connections, namely the National People's Congress (NPC), the only legislative body, or the Chinese People's Political Consultative Conference (CPPCC), advisory board for government, could provide a seat for those managers as the members in political councils. As such, they might be inclined to voluntarily implement environmental activities.

This study has several limitations leading to future research. First, ten case companies make our findings tentative in nature, and the geographical context of China limits the generalizability. Future studies could select multiple samples in various countries to generalize the conclusion. Second, single-respondent interview based on self-report is acknowledged as a useful research tool. While as a successful strategy formulation requires the involvement of manages of all levels (Mintzberg, 1990), thus the opinions from middle-level as well as front-line managers is helpful for better understanding of this topic in future. Third, this study mainly focused on the drivers of firms' PES, future research therefore need to explore the barriers that largely hinder firms' adoption PES. Fourth, as motivations have been mixed in cases 1, 3 and 4, future studies thereby could calculate the weight of each driver in driving firms' PES.

Chapter 2: Top Managers' Environmental Awareness and Proactive Environmental Strategy: The Moderating Role of Entrepreneurial Orientation

Abstract: Drawing on upper echelons theory, this study examines the direct impact of the two dimensions of managerial environmental awareness (EA) on proactive environmental strategy (PES), and the moderating role of the three dimensions of entrepreneurial orientation (EO), namely, innovativeness, proactiveness, and risk-taking, in the main relationship. Our empirical results, based on a sample of 228 Chinese manufacturing firms, show that both of the two dimensions of EA, namely, environmental risk awareness (ERA) and environmental cost-benefit awareness (ECA), are positively and significantly related to PES, and that the positive relationship between ERA (ECA) and PES is strengthened (weakened) for firms with high levels of innovativeness and for firms that are less oriented towards risk taking. Unexpectedly, the results reveal that the interaction between proactiveness and the two dimensions of EA does not significantly impact the corporate PES. These findings suggest that there are multiple types of complex cognition within organizations, and the consideration of both individual and organizational cognitions are playing a critical role in favor of firms' PES.

Keywords: Proactive Environmental Strategy; Environmental Awareness; Entrepreneurial Orientation; Chinese manufacturing industry.

Introduction

How to manage the business-natural environment interface has become a "hot" issue for organizations' strategic decisions, and an increasing number of scholars are calling for enterprises to adopt proactive instead of reactive environmental strategies to tackle the environmental issues (Aragón-Correa, Marcus, & Vogel, 2020; Menguc et al., 2010; Sharma & Vredenburg, 1998). A proactive environmental strategy (PES) is a pattern of voluntary environmental practices that go beyond the environmental regulations (Aragón-Correa & Sharma, 2003), which potentially accompanies with the development of firms' competitive advantages by improving productivity/efficiency and external legitimacy (Esty & Winston, 2006;

Hart, 1995, 2005; Hart & Milstein, 2003). Therefore, scholarly interest in examining the antecedents of PES has been growing substantially during the last two decades (Aragón-Correa et al., 2020; Aragón-Correa & Sharma, 2003).

Getting insights from the previous reviews that address the antecedents of CSR or nonmarket strategies (Aguinis & Glavas, 2012), the predictors of PES generally correspond to three levels, namely, the institutional or stakeholder level, the organizational level, and the individual level. The extant studies in this field tend to focus on the institutional and organizational predictors of PES (Aragón-Correa et al., 2020), such as the stakeholder legitimacy pressure related to three institutional pillars, the regulatory, normative, and culture-cognitive pillars, and organizational resources and capabilities through the lens of institutional theory and the resource-based view.

However, as Papagiannakis et al. (2014) suggested that considerable attention should be paid on the individuals who are responsible for environmental decision-making, allowing to better understand the behavioral drivers behind the environmental strategy. Armed with this call, the psychological characteristics like top managers' environmentally-friendly strategic mindsets (Flannery & May, 2000), managerial interpretation of environmental issues (Sharma, 2000) has been argued to impact the firms' pursuit of PES by adopting upper echelon theory (Hambrick, 2007). Since it is difficult to obtain executives' psychological data to test managerial cognition, the vast majority of these studies use demographic data as proxies for describing the psychological characteristics of executives. However, such approach is still deemed to be limited in enabling us to clearly understand the effects of managerial cognition on their decision making. Furthermore, a majority of earlier works, although insightful, neglect the constraints of organizational cognitive paths, which are reflected in factors such as organizational culture and strategic orientation. As such, this current study examines the direct impact of managerial cognition (i.e., EA) on PES as well as the moderating effect of organizational cognition (i.e., EO) into the aforementioned relationship.

However, although managers' EA has been suggested as a key predictor of pro-environmental behaviors (Qu et al., 2015), such as environmental responsibility and sustainability-oriented innovation like green innovation, environmental innovation,

and ecological innovation (Gadenne et al., 2009; Hillestad et al., 2010; Peng & Liu, 2016; Yu et al., 2019), these extant literature mostly manifest the EA as the single dimensional construct. Recent research recognizes that EA is a multi-dimensional construct due to the complexity of human being's cognition. For example, referring to Gadenne et al. (2009)'s initial work, managers' EA is explicitly categorized into environmental risk awareness (ERA) and environmental cost-benefit awareness (ECA) in Peng and Liu (2016)'s subsequent study. More concretely, the former ERA reflects the extent to which managers are aware of the firm's negative impacts on the natural environment, and the ECA, grounded by self-interest, demonstrates the managers' recognition of potential cost reduction and/or profit improvement by means of environmental initiatives. By this very definition, this study adopts EA's two dimensions, namely, ERA and ECA, into the analysis. Relying on managerial and organizational cognition theory (Kaplan, 2008; Kaplan, 2011; Walsh, 1995), executives' cognitive or mental systems would influence their attention focus on and the subjective interpretation of business environment, and then impact their reaction to external environmental changes. Along with this thought, the predictors shaping executives' mindset might affect the strategic decision and organizational behaviors. Thus, we assume that the two types of EA, namely ERA and ECA, would influence the PES of the focal firms.

Besides, given the fact that organizational cognition plays an essential role in affecting environmental decision-making (Sharma, 2000), and the adoption of PES is closely related to firms' strategic posture (Aragon-Correa, 1998) anchored in the firm's strategic orientation, this study further examines the moderating role of firms' entrepreneurial orientation (EO) between ERA/ECA and firms' PES. Specifically, EO is a firm-level strategic orientation that captures organization's strategy-making practices and methods, managerial philosophies, and strategic behaviors that are entrepreneurial in nature (Anderson et al., 2009). As such, top managers' receptivity regarding pollution prevention would increase when firms possess an EO. In other words, executives tend to enhance the proclivity of protecting natural environment when the EO is pervasive and prevalent in the firms. In the past conceptualization of EO, innovativeness, proactiveness, and risk taking have been identified as its core sub-dimensions (Rauch et al., 2009; Wales et al., 2013). Concretely, innovativeness

describes a firm's tendency to participate in creativity and experimentation through the introduction of new products/services, and also depart from established business (Lumpkin & Dess, 1996), risk-taking involves engaging in high-risk actions with a possibility of high returns and taking bold activities in the uncertain environments (Covin & Slevin, 1989), proactiveness represents an opportunity-seeking, forward-looking behaviors characterized by introducing the new products and services ahead of competitors and acting on future needs (Rauch et al., 2009). These three sub-dimensions of EO could be viewed as independent component (Lumpkin & Dess, 1996) which is in line with the recent call on the investigation of association between each sub-dimension and other key outcome variables (George, 2010), especially in the context of transitional economies.

Regarding PES, it is viewed as a pattern of pro-active activities, preferences, and decision-making in managing business-natural environment interface (Sharma & Vredenburg, 1998). Thus it can be assured that PES is entrepreneurial, innovative, and risky as it exceeds much beyond what is required by environmental regulations (Darnall et al., 2010; Sharma, 2000). Particularly, adopting PES largely requires the acquisition and installation of creative technologies (Russo & Fouts, 1997), and the development of proactive organizational capabilities (Sharma & Vredenburg, 1998). As such, firms are not likely to pursue a PES unless their upper echelons emphasize entrepreneurial activities (Menguc et al., 2009). Aligned with Aragon-Correa and Sharma's claim, proactive strategies such as pollution-prevention approaches need to be integrated into the entrepreneurial dimension of a firm. That is, firms' higher EO lays the foundation for exerting the PES (Menguc et al., 2010) as it entails huge risk and considerable uncertainty, and requires an innovative (Aragon-Correa, 1998; Aragon-Correa & Sharma, 2003). Consistent with above-mentioned argument, the interplay of managers' EA and firm's EO in explaining PES thus seems reasonable. In doing so, we theoretically and empirically contribute to the environmental management literature by means of examining how the two dimensions of managers' EA facilitate firms' PES, and also identifying whether the effect of EA on PES will be strengthened or weakened under varying conditions with different levels of EO's three sub-dimensions.

The paper is organized as follows. In section 2, we review the literatures and formulate the hypotheses. The methodology and data collection are outlined in Section 3, followed by a presentation of the empirical results in Section 4. The final section draws the main conclusion and implications.

Theory and Hypotheses

For reference, we develop a conceptual model as shown in Figure 1 to delineate the proposed framework. In addition, this study further relates each dimension of EO to the abovementioned relationships to examine moderating effects.

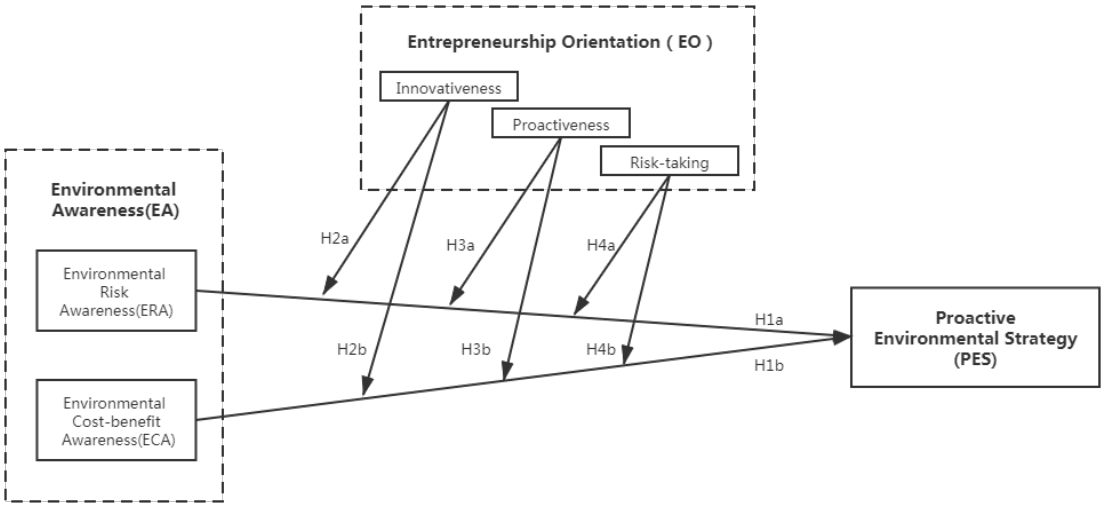

Figure 2.1 The conceptual framework

Environmental awareness (EA), synonymous with environmental concern or environmental consciousness, is inherent in human nature. Since this concept first becomes formalized in late 1960s (Roth, 1992), numerous studies have attempted to interpret its exact meaning, which is yet to be reached because interpretations largely depend on individual ideology. Although numerous studies in business and management disciplines argue that EA is a key predictor of environmental decisions in relation to consumers, employees, and enterprises (Cheema, Afsar, Al-Ghazali, & Maqsoom; del Brio & Junquera, 2002; Huang, Lin, Lai, & Lin, 2014; Kikuchi-Uehara, Nakatani, & Hirao, 2016; Lin & Chang, 2012; Liu, Anderson, & Cruz, 2012; Peng & Liu, 2016; Zhang, Wang, & Lai, 2015), such defined approach to identify

EA have limitations because it captures only a part of this construct. Recent studies suggest that EA ought to be a multi-dimensional construct owing to the complexity of human being's cognition. A highly cited article from Gadenne et al. (2009) first classified EA into environmental cost-benefit awareness and general environmental awareness. The subsequent work conducted by Peng and Liu (2016) further divided EA into environmental risk awareness (ERA) and environmental cost-benefit awareness (ECA) respectively. The ERA reflects the extent to which managers are aware of the firm's negative impacts on the natural environment, implying the ethics and morality of executives in respect to dealing with business-natural environmental interface. By contrast, the latter ECA describes the prediction of cost decreasing and/or profit achieving regarding environmental issues. With this premise as a reference, this study elaborates on the different mechanisms of ERA and ECA on fostering PES based on upper echelons theory.

Upper echelons theory holds that corporate strategic choices and performance levels are partially predicted by personal values, traits and experiences (Hambrick & Mason, 1984). This theory proposes that executives' characteristics serve to filter and distort information in three steps. That is, managers' personal values, traits and experiences tend to affect their field of vision or the focus of attention (the directions they look and listen), selective perception (what they see and hear), as well as the interpretation (how they attach meaning to what they see and hear) (Hambrick, 2007). Guided by this three steps, we will elaborate on how ERA and ECA affect PES in the following part.

Top managers' EA and PES

First, executives with greater EA are more likely to notice the environmental issues (Peng & Liu, 2016). It has been implied that top managers' internal pressure is critical for adopting environmental practices by firms (Delmas & Toffel, 2004b). Some scholars have stated that firms are more likely to adopt environment-friendly practices if their concerns on environmental issues are closer to that of the firm's CEO (Martin, Muûls, De Preux, & Wagner, 2012). Due to the implicit merits of environmental initiatives, they are not likely to attract the decision makers' attention (Li, 2014). Attention, a special kind of rare resource (Knippenberg, Dahlander, Haas,

& George, 2015; Simon, 1957), is the starting point of human decision-making process (Ocasio, 1997). Accordingly, executives owning EA would draw attention to environmental issues because they are more sensitive and knowledgeable about related topics (Gadenne et al., 2009). Specifically, executives with greater ERA tend to pay more attention to the adverse impacts of business activities on the natural environment, and better understand the environmental legislation relevant to their businesses as well as the best environmental practices in their industry. On the other hand, managers having greater ECA are sensitive to the potential business value or opportunities in relation to environmental issues. They are thereby inclined to regard environmental initiatives implementation as a useful mean of improving production efficiency and product differentiation with environmental attributes for the purpose of enhancing profitability (Gadenne et al., 2009; Peng & Liu, 2016). Therefore, regardless of whether managers possess higher ERA or ECA or are excellent in both, they would allocate attention to the environmental issues due to altruism/morale or egoism/self-interest.

Second, as business leaders with higher EA naturally focus on environmental issues, they are more likely to perceive and interpret environmental issues positively (Peng & Liu, 2016). In line with Kocabasoglu, Prahinski, and Klassen (2007)'s state, only those executives who fully realize the importance of environmental protection would allocate the valuable resources to implement environmental practices. More concretely, managers with greater ERA tend to experience a high level of perceived environmental pressures from salient stakeholders because they are knowledgeable about environmental policy, their competitors' reaction to environmental requirements and their negative environmental impacts (Peng & Liu, 2016). As such, they are likely to equally prioritize environmental performance and profitability (Gao & Bansal, 2013). By contrast, managers with higher ECA are concerned more about potential economic gaining from environmental issues (Peng & Liu, 2016). Thereby, they might proactively interpret the environmental initiatives, and are less sensitive to the underlying risk from environmental countermeasures.

Third, as argued above, managers with higher EA would positively interpret environmental issues, they are bound to adopt PES to meet external environmental demand. Specifically, executives with greater ERA tend to emphasize the strategic

importance of clean production in their organizations, and prefer to implement PES such as pollution prevention initiatives instead of end-of-up cleanup (Zhang et al., 2015). Empirical research has suggested that top managers' environmentally-friendly mindsets are beneficial for firms' PES (Flannery & May, 2000; Marshall et al., 2010). However, managers with greater ECA is more likely to be the first mover in green market. Previous literature shows that environmental proactivity can reduce costs by decreasing compliance costs, avoiding legal liabilities, reducing waste, and improving efficiency and productivity (Ambec & Lanoie, 2008). Meanwhile, PES might improve a firm's legitimacy (Bansal & Clelland, 2004) and strengthen its reputation (Miles & Covin, 2000).

Therefore, we propose Hypothesis 1a and 1b as follows:

H1a: The ERA of top managers is positively related to firms' PES adoption.

H1b: The ECA of top managers is positively related to firms' PES adoption.

EO as the moderator

Originated from the strategic choice literature (Child, 1972), EO represents a firm's strategic posture in capturing the entrepreneurial decision-making styles, methods, and behaviors (Lumpkin & Dess, 1996), composing of three dimensions, namely, innovativeness, proactiveness, and risk-taking (Covin & Slevin, 1989; Miller, 1983). In other words, entrepreneurial firms would enable top managers to exhibit a propensity to take calculated risks, be innovative, and demonstrate strategic proactiveness (Covin & Slevin, 1989). These dimensions of EO may vary independently of each other in a given context (Lumpkin & Dess, 1996). In the following section, we discuss the moderating effects of EO's three sub-dimensions (i.e., innovativeness, proactiveness, and risk-taking) between top managers' EA and their pursuit of PES.

The moderating role of innovativeness

Within the EO framework, innovativeness is characterized by supporting new ideas, creativity, experimentation, and developing new products, services as well as technology, thereby deviating from the established business practices (Lumpkin &

Dess, 1996). However, the implementation of proactive environmental activities in the organization is supposed to transform the ways of thinking and running business. Involved in this transformation, executives is obliged to place heavy emphasis on the substantial eco-innovation (Zhang & Walton, 2017), including both technology like ecological products and processes innovation, and non-technology innovation in the realm of managerial style, business model and local community (Cheng, Yang, & Sheu, 2014; Jenkins, 2009). In light of these challenges, entrepreneurial firms are capable of innovating on the internal activities, processes and procedures to pursue the PES. For example, those firms may have a higher propensity in eco-innovations (Klewitz & Hansen, 2014), such as projects related to eco-design (Bos‐Brouwers, 2009), eco-efficiency (Aragón-Correa, Hurtado-Torres, Sharma, & García-Morales, 2008), and cleaner production (Altham, 2007; Cheng et al., 2014). Moreover, these innovative initiatives might improve productivity, the manufacturing process (King & Lenox, 2002), and board community (Hansen, Sondergard, & Meredith, 2002), which in turn maintain an environmentally responsible standard. Taken together, firms with greater innovativeness is likely to promote firms' PES adoption.

However, top manager's EA is divided into ERA and ECA as abovementioned. The former ERA is significantly and positively related to ecological products and process innovation (Peng & Liu, 2016). Therefore, executives enjoying higher ERA are in an effort to benefit whole stakeholders outside of their own firms, coupling with their core values of changing the world and searching the best answers to social issues. Thus it can be addressed that those executives tend to make commitment to seek the long-term business success. Meanwhile, the long-term rather than short-lived nature of EO has been suggested in several studies. On the innovativeness part, it naturally owns a general trait of long-term orientation with a certain amount of heroism and social responsibility, which seemed to be better aligned with the long-term orientation of executives' ERA. Besides, innovativeness is beneficial for establishing and integrating sustainability values in new products and processes (Belz, 2013), especially the most green practices and environmental commitments (O'Neill & Gibbs, 2016). With this premise, it is reasonable to predict that ERA and innovativeness complement to promote firms' PES.

Contrary to ERA, ECA is significantly and positively related only to ecological product innovation (Peng & Liu, 2016). For executives with higher ECA, environmental performance is merely used to reduce the costs or gaining profits. In other words, even in the absence of external pressures, firms are more likely to adopt PES as long as executives believe that such strategy can contribute to their financial performance. Therefore, such these executives are more pragmatic and self-interest as they concern more about environmental investment and economic return through conducting PES. In this sense, the underlying logic of ECA contradicts the trait of innovativeness, which highly emphasizes the nature of long-term orientation. As a result, it reasonably assume that the interactive effect on PES exerted by ECA and innovativeness are contradictory.

Therefore, we propose Hypothesis 2a and 2b as follows:

H2a: The positive relationship between ERA and PES is stronger for firms with a high level of innovativeness.

H2b: The positive relationship between ECA and PES is weaker for firms with a high level of innovativeness.

The moderating role of proactiveness

Proactiveness is characterized as the opportunity-seeking and forward-looking behaviors that introduce the new products/services ahead of competitors, and also anticipate the future demands (Covin & Slevin, 1989; Rauch et al., 2009). By doing so, proactiveness could enable firms to better adapt to social mutations (Anderson, 1998). Moreover, proactive firms are more likely to decentralize the environmental decision-making, passing it to line managers and framing them discretion to predict future strategies (Sharma, 2000) by strategically monitoring markets, customers, and governmental requirements. We thus argue that the interactive effect between proactiveness and EA is a substitute for rather than a complement of PES driver because PES in nature is embedded in proactiveness. Hence, either proactiveness or the EA is enough for firms' PES.

Specifically, executive with higher ERA might simply be motivated to pursue PES due to their personal moral obligation. Also, these managers are knowledgeable

about environmental regulations together with the best environmental practices in their industry (Gadenne et al., 2009). Moreover, proactive firm is supposed to enable executives to know about the government regulations, it is reasonable to assume that proactive firms may create a synergy when executives possess a high degree of ERA.

Similarly, as top managers having ECA are inclined to purse financial returns or reduce costs via PES implementation, and the PES in nature is hugely embedded in proactiveness characterized by the development of new market opportunities and better access to markets (Ambec & Lanoie, 2008), thus the capability of discovering new market opportunities endowing by proactive firms seems as the synergy aligned with the ECA of executives. The characteristics and goals of "prospector" firms, as measured on the entrepreneurial dimension, have been assumed to be similar to the firms asking for PES in the choices of products, markets, and competitive measures (Aragón-Correa, 1998).

Therefore, we propose Hypothesis 3a and 3b as follows:

H3a: The positive relationship between ERA and PES is stronger for firms with a high level of proactiveness.

H3b: The positive relationship between ECA and PES is stronger for firms with a high level of proactiveness.

The moderating role of risk-taking

Regarding risk-taking in the EO framework, it involves taking bold actions by venturing into the unknown, engaging in high-risk activities with a chance of high returns, and/or committing significant resources to ventures in uncertainty (Covin & Slevin, 1989), such as investing in projects with uncertain outcomes (Lumpkin & Dess, 1996). Along with this premise, we argue that the basic logic behind ERA conflicts with that of risk-taking. By contrast, the logic behind ECA and risk-taking are compatible. Therefore, the interaction of ERA and risk-taking negatively affect PES, whereas the interaction of ECA and risk-taking positively impact PES.

Top managers possessing ERA thereby prefer PES due to their underlying risk awareness. In an apparent paradox, these managers view the implementation of PES

as a potential contributor to controlling or avoiding risks and as a risk in its own right. That is, embracing PES by executives with greater ERA is in seek to reduce their firms' levels of environmental risk, while the principles of risk-taking are in opposition to this. Therefore, risk-taking is likely to weaken the positive relationship between ERA and PES.

Contrary to ERA itself, executives with ECA emphasize economic returns via pro-environmental activities and are inclined to adopt PES to create the first-mover advantages (Hult & Ketchen Jr, 2001) by lowering the cost, improving productivity, or selling pollution control technology. However, it seems costly for firms to adopt the PES, and the return from environmental invests would take some time (Aragón-Correa et al., 2008). Moreover, the justification of environmental investments seems complicated due to executives' bounded rationality, and the additional costs of green products could not be directly transferred to the customers (Bianchi & Noci, 1998). All these could perhaps pose some business risk. In light of these uncertainty, entrepreneurial firms that exhibit a high level of risk-taking behaviors is helpful for those managers with high ECA overcome their concerns about these vast barriers. Thus, the ability of risk tolerance is likely to strengthen the positive relationship between executives' ECA and PES.

Therefore, we propose Hypothesis 4a and 4b as follows:

H4a: The positive relationship between ERA and PES is weaker for firms that exhibit a high level of risk-taking.

H4b: The positive relationship between ECA and PES is stronger for firms that exhibit a high level of risk-taking.

Methodology

Sample and data

We selected the manufacturing firms in Shanxi province, a typical resource-based region in China to test our hypotheses. Shanxi has been facing a dilemma of economic development and environmental protection, which presents a fascinating empirical setting for this study. Labeled as the town of coal (Zhang & An, 2018), the overexploitation of coal resource caused the dramatic environmental pollution

over past decades (Yang & Teng, 2018). In the year 2010, Chinese government has introduced the resource-based economy transforming policy in Shanxi to construct a resource-efficient and environmentally-friendly society by adjusting the industrial structure in this region. And the Shanxi government has been taking active measures to tackle industrial pollution and has made significant achievements in this regard. In 2015, the Chinese premier announced the national "Made in China 2025" initiative, which was intended to transform the manufacturing industry from low-cost to high-value stances. Green and sustainable development has been widely recognized in China as a key strategic objective to achieve within next two decades. Thus, Shanxi is a natural experiment lab to test our hypotheses.

Our questionnaire was initially developed in English and double back-translated into Chinese (Brislin, 1980). Back translation by two competent scholars was conducted to avoid potential bias and ensure validity (Churchill Jr, 1979) with their capabilities in both languages and substantial research experience in relevant fields. Moreover, we conducted in-depth interviews with 12 top managers from manufacturing firms in Lvliang and Jincheng cities of Shanxi province in April 2019. According to interviews' response, we refined indicators through two rounds of the modification to reach better clarity. After we finalized the questionnaire, we made an electric version of it on ***Questionnaire Star*** (https://www.wjx.cn/), a widely used online survey tool in China. The questionnaire on ***Questionnaire Star*** can be shared with targeted subjects via social media like WeChat, which has more than 1.2 billion users. The questionnaire includes three parts: the first two parts are mainly about firms' as well as respondents' profiles, and the scales of key constructs in this study are detailed in the last section.

Based on our industrial network and local governmental support, we contacted almost 500 firms and invited their top managers to participate in our research. All of them agreed to support us once they received the research purpose and topic. We conducted a two-round online survey by virtue of sharing the questionnaire via social Media. The first-round survey was conducted between June and November 2019 and received 234 responses. To check our results' robustness in the first survey, we conducted the second survey from February to May 2020 and obtained 230 responses. The respondents included top managers, vice presidents, chairpersons,

and general managers. In total, a sample of 464 responses is well received. We retained only one record if more than one respondent from a given firm filled out a questionnaire. Additionally, we removed the responses with completion times of less than 180 seconds and those with missing data. At last, we obtained 228 effective samples.

Measures

We adopted a reflective measurement model and multi-item scales to measure the study constructs (**see Table 2.1**). We measured all the constructs with reflective indicators and used a 7-point Likert-type scale, ranging from 1 ("strongly disagree") to 7 ("strongly agree").

Proactive Environmental Strategy (PES). We used three indicators adopted from Wagner and Schaltegger (2004)'s work to measure PES.

Environmental Awareness (EA). We used six items from Peng and Liu (2016)'s work to measure EA in accordance with its two dimensions, ERA and ECA.

Entrepreneurial Orientation. Based on Miller (1983) and Covin and Slevin (1989)'s initial studies, each dimension of EO, namely innovativeness, risk-taking, and proactiveness was measured by three items.

Control Variables. We also control for several firm-level and respondent-level variables based on prior studies and the potential disturbing variables influencing our research design. The firm-level control variable included firm age and size. Firm age was measured by firms' operating time, while the size is measured by the natural logarithm of the number of full-time employees. The controlling variables on the respondent-level include gender (1=male, 0=female), age, tenure (working year in current affiliation), origin (native=1, nonnative=0), the number of years that the respondents had lived locally, and position (i.e., Chairman, Secretary of the Communist Party of China (CPC) committee member, CEO or General Manager, Plant Manager, Vice General Manager).

Validity and Reliability

A confirmatory factor analysis (CFA) was conducted by AMOS 21.0 to assess the multi-item constructs' convergent and discriminant validity. The CFA results

suggested that the measurement model had an acceptable model fit ($\chi 2$ = 188.507, p =.000; $\chi 2$/df = 1.571; GFI = 0.920; CFI = 0.977; IFI = 0.977; RMSEA = 0.050). All factor loadings are greater than 0.60 and significant (Anderson & Gerbing, 1988). In addition, no cross-loadings were identified, indicating the unidimensionality of the measures. The average variance extracted (AVE) estimates were greater than or equal to 0.50 (Bagozzi & Yi, 1988). These two findings supported the convergent validity of all constructs. All the constructs were measured by reflective indicators instead of formative indicators. We thus calculated the Cronbach's α and composite reliability (CR) value for each of the factors to access their convergent validity and reliability. All Cronbach's α and CR values exceeded the 0.7 benchmark, suggesting that all factors have good internal consistency. Taken together, the results of these tests implied that the measures had acceptable convergent validity and reliability.

Table 2.1 shows the scale for the factor, the items' standardized factor loadings, and the Cronbach's α and CR values for each factor. All correlations between our study constructs were below |0.7|, demonstrating the distinctness of the measures and their discriminant validity. Besides, the correlations between two constructs are less than the square root of the AVE estimates of the corresponding constructs for all the pairs (Fornell & Larcker, 1981), indicating that these constructs had more internal correlation than external correlation and thus suggesting their discriminant validity. The results suggest that the constructs were distinct and that they exhibited evidence of discriminant validity.

Table 2.1 Construct measurement and confirmatory factor analysis results (N=228)

Constructs	Measuring items	Standardized loading	α	CR	AVE
Proactive Environmental Strategy (PES)	Enterprises will strictly implement cleaner production even without external supervision.	0.888	0.890	0.896	0.743
	Outlook on green development has incorporated into enterprise culture.	0.912			
	Enterprises input a large number of resources in the development of environmental protection technologies.	0.780			
Environmental Risk Awareness (ERA)	Top management team pays much attention to the adverse impacts of our firm's behavior on the natural environment.	0.859	0.896	0.898	0.747

	Top management team is very clear about how environmental legislation is relevant to our business.	0.859			
	Top management team is very clear about what represents "best environmental practice" in our industry.	0.874			
Environmental Cost-Benefit Awareness (ECA)	Top management team thinks that adopting environmental initiatives can improve sales revenue.	0.807	0.917	0.921	0.795
	Top management team thinks that adopting environmental initiatives can reduce costs.	0.920			
	Top management team thinks that adopting environmental initiatives can improve production efficiency.	0.942			
Innovativeness of Entrepreneurial Orientation (INN)	In general, our firm favors a strong emphasis on R&D, technology leadership, and innovations.	0.844	0.907	0.909	0.770
	Our firm favors "tried-and-true" procedures, systems, and methods.	0.937			
	Our firm is willing to try new ways of doing things and seeks unusual novel solutions.	0.849			
Proactiveness of Entrepreneurial Orientation (PRO)	Our firm is among the first in the industry to introduce new products or services.	0.809	0.899	0.914	0.782
	Our firm is the first to initiate actions to competitors, for which the competitors then respond.	0.977			
	Under uncertainty, our firm always adopts an adventurous and active attitude.	0.858			
Risk-taking of Entrepreneurial Orientation (RIS)	Our firm strongly prefers high-risk projects (with chances of very high return).	0.758	0.856	0.860	0.673
	Because of the nature of the environment, our firm always takes bold, wide-ranging strategic actions rather than making minor tactical changes.	0.897			
	When confronted with decisions involving uncertainty, our firm always adopts a proactive posture to maximize the probability of exploiting opportunities.	0.799			
CFA Model Fit Summary: $\chi 2 = 188.507$, p =.000; $\chi 2/df = 1.571$; GFI = 0.920; CFI = 0.977; IFI = 0.977; RMSEA = 0.050					

Notes: All factor loadings of the confirmatory factor analysis (CFA) are statistically significant. α = Cronbach's alpha; CR = composite reliability; AVE = average variance extracted.

Assessing common method bias

Because the independent and dependent variables' data were both measured by self-reported data from same respondents, there was a potential for common method bias (CMB). We followed the recommendation from Podsakoff, MacKenzie, Lee, and Podsakoff (2003) in terms of pre-procedural and post-statistical techniques to control CMB.

In term of pre-procedural methods to control CMB, we made three major efforts. First, we discussed our questionnaire with 12 top managers and two experts in the environmental management field and refined the indicators to ensure that all the items were clear enough to be understood. We also pre-screened the potential respondents to ensure they were knowledgeable about environmental management. Thus, we reduced the potential measuring error related to low content validity caused by a confusing presentation of indicators. Second, to increase the respondents' participation in our survey, the survey questionnaire was shortened to a reasonable length. Meanwhile, the questionnaire was distributed anonymously, and we promised the findings would offer to them if they leave the email address in questionnaire. Third, this survey was distributed based on our social connections with managers in the target firms and received the support of local government officials who were responsible for the local governments where the target firms were located. In other words, the trust stemming from personal ties between researchers and respondents, as well as the power of authority, ensured our survey's quality.

Two post-statistical techniques are adopted to assess the impact of CMB on our results. First, Harman's single-factor test was conducted to examine whether this problem affected our data. An exploratory factor analysis with all the items indicated no single factor accounted for more than 50% of the total variance in our data before rotation, indicating that there was no severe CMB problem. A Harman's single-factor test of our data demonstrated that the first factor analyzed before rotation accounted for less than half of the total variance (i.e., 35%). This result suggests that CMB caused any of the significant relationships among our study variables. This finding shows that CMB was not a serious issue in this study. Second, as noted by Aiken, West, and Reno (Aiken, West, & Reno, 1991), supported interaction hypotheses were less susceptible to CMB because respondents are unlikely to have "interaction-based theories" that could systematically change their responses and produce biased results. Our interaction hypotheses, if supported, can provide additional evidence that CMB was not an issue in this study.

Results

Table 2.2 presents the means, standard deviations, and correlations of the variables examined in this study. Ordinary least squares (OLS) regression were used to test the hypothesized direct effects and moderating effects. Table 2.3 shows the results of OLS regression models. Model 1 included only the control variables, while Model 2 added the independent variable of ERA and ECA to examine their direct effects on PES. Model 3 included the three dimensions of EO, namely, innovativeness, proactiveness, and risk-taking, as moderating variables, and Model 4 included the interaction variables (the product of the three dimensions of EO and two dimensions of EA) to test the moderating effects of EO's three dimensions on the relationship between ERA/ECA and PES. In seek to reduce the potential of the multicollinearity, we mean-centered independent and moderating variables before the creation of the interaction terms (Aiken et al., 1991). Moreover, in the regression models, variance inflation factors (VIFs) were examined, and the maximum VIFs associated with each model ranged from 1.592 to 3.097, falling below the maximum acceptable value of 10. Thus, there was no significant multicollinearity among the explanatory variables in the above linear regression models. Moreover, endogeneity, defined as a correlation between explanatory variables and the error term in the regression, violates the classical Gaussian assumption and leads to biased and inconsistent parameter estimates in OLS. Briefly, omitted variables, referring to the very variables that need to be included in the vector of explanatory variables, are a significant source of endogeneity. Hence, for testing the endogeneity, Ramesy (1969)’s omitted-variable regression specification-error test was conducted and the results revealed that P-value was 0.0523, which was not significant at 5% level. The null hypothesis in Ramsey tests is having omitted variables. Therefore, rejecting the null hypothesis at 5% significant level means having no important missing variables. That is, no correlated omitted variables would appear in the error term. Thus it can be indicated that the regression models in Table 2.3 have no endogeneity from the point of important missing variables.

H1 proposes that the ERA (H1a) and ECA (H1b) of top managers are positively related to PES. The results of Model 2 indicate that both ERA and ECA are positively related to PES (H1a: $\beta=0.351$, $p<0.001$; H1b: $\beta=0.394$, $p<0.001$), supporting H1a and H1b.

H2-4 postulates that the three dimensions of EO have moderating effects on the relationship between ERA/ECA and PES. H2a claims that the positive relationship between ERA (ECA for H2b) and PES is strengthened (weakened) for firms with a higher level of innovativeness. H3 argues that the positive relationship between ERA/ECA (H3a/H3b) and PES is stronger for firms with a higher level of proactiveness. H4a claims that the positive relationship between ERA (ECA for H4b) and PES is weakened (strengthened) for firms with a higher level of risk-taking.

The results of Model 4 show that interaction of innovativeness and ERA (ECA) is significantly and positively (negatively) related to PES (H2a: $\beta=0.189$, $p<0.05$; H2b: $\beta=-0.143$, $p<0.05$), supporting H2. It also shows that the interaction of risk-taking and ERA (ECA) is significantly and negatively (positively) related to PES (H4a: $\beta=-0.136$, $p<0.05$; H4b: $\beta=0.132$, $p<0.05$), supporting H4. However, the interaction of proactiveness and ERA/ECA is insignificantly related to PES (H3a: $\beta=-0.033$, $p>0.1$; H3b: $\beta=-0.070$, $p>0.1$). Thus, H3 is not supported.

Table 2.2 Descriptive statistics and correlation matrix (N=228)

Constructs	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1 PES	5.855	0.965	0.862a																
2 ECA	5.380	1.149	.508**	0.864															
3 ERA	6.120	0.796	.510**	.410**	0.892														
4 INN	5.155	1.287	.391**	.227**	.338**	0.878													
5 PRO	4.335	1.105	.209**	.141*	.271**	.512**	0.884												
6 RIS	3.895	1.117	0.040	.137*	.134*	.275**	.452**	0.820											
7 Firm Age	14.737	11.645	-0.007	-0.064	0.040	0.075	0.086	0.072											
8 Firm Size	4.633	1.792	0.027	-0.029	0.116	.167*	.131*	0.061	.438**										
9 Chairman	0.158	0.365	-0.014	0.007	-.181**	-0.021	-0.030	-0.060	-0.069	-0.058									
10 Secretary	0.022	0.147	.137*	-0.032	0.091	0.067	0.108	0.050	0.068	0.010	-0.065								
11 CEO or G	0.294	0.457	0.087	-0.057	0.028	0.070	0.081	-0.011	-.145*	-0.091	-.200**	0.035							
12 Plant Manager	0.202	0.402	0.038	-0.062	0.071	-0.055	-.159*	-.142*	0.066	-.164*	-.218**	-0.001	-0.084						
13 Vice GM	0.197	0.399	0.002	0.034	0.082	0.063	0.073	0.096	0.066	0.097	-.185**	0.001	-.320**	-.194**					
14 Gender of Respondents	0.996	0.066	0.013	0.119	-0.018	.198**	0.020	-0.026	0.050	0.031	0.029	0.010	0.043	-.132*	0.033				
15 Age of Respondents	43.746	9.103	0.008	-0.112	-.147*	-0.002	-0.060	-0.080	0.048	0.032	.182**	0.087	0.037	-0.029	0.026	-0.002			
16 Tenure of Respondents	6.636	5.055	-0.062	-0.020	-0.100	-0.014	-0.003	-0.043	0.096	-0.013	.184**	-0.055	-0.005	-0.074	-0.023	-0.005	.286**		
17 Origin of Respondents	0.719	0.450	0.018	0.091	-0.004	0.083	-0.076	-0.094	-0.033	-.179**	0.056	0.027	-0.047	0.022	0.065	0.106	0.120	.133*	
18 Local living Years	26.772	16.800	0.009	-0.037	-0.078	-0.015	-0.094	-0.126	0.042	-0.078	0.118	0.111	-0.004	-0.037	0.084	0.078	.430**	.178**	.465**

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).
[a.] The square root of the average variance extracted (AVE) for each construct is along the diagonal (in bold)

Table 2.3 Multiple regression analyses for testing hypotheses (DV=PES; N=228)

Predictors and controls	**Model 1**	**Model 2**	**Model 3**	**Model 4**
Firm Age	-0.024	0.011	0.019	0.034
Firm Size (Ln employee number)	0.062	0.013	-0.028	-0.040
Chairman	0.061	0.097	0.075	0.093
Secretary of CPC Committee	0.135*	0.108*	0.103*	0.126*
CEO or GM	0.124	0.130*	0.103†	0.087
Plant Manager	0.081	0.073	0.051	0.035
Vice GM	0.062	0.030	0.020	0.009
Gender of Respondents	0.010	-0.028	-0.077	-0.139*
Age of Respondents	-0.001	0.082	0.069	0.067
Tenure of Respondents	-0.057	-0.048	-0.049	-0.047
Origin of Respondents	0.035	-0.028	-0.063	-0.087
Local living Years	-0.016	0.017	0.026	0.039
ERA		0.351***	0.288***	0.304***
ECA		0.394***	0.383***	0.388***
INN			0.255***	0.241***
PRO			-0.009	-0.007
RIS			-0.112†	-0.106†
ERA*INN				0.189*
ECA*INN				-0.143*
ERA*PRO				-0.033
ECA*PRO				-0.070
ERA*RIS				-0.136*
ECA*RIS				0.132*
F Value	0.698***	10.553***	10.494***	8.589***
R^2	0.038	0.41	0.459	0.492
Adjusted R^2	-0.016	0.371	0.416	0.435
ΔR^2	-	0.372	0.05	0.033
ΔF	-	67.104***	6.444***	2.185*
VIF-max	1.592	1.595	1.676	3.097

***. Correlation is significant at the 0.001 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

†. Correlation is significant at the 0.1 level (2-tailed).

Discussion and Conclusion

The current study's main findings suggest that both executives' ERA and ECA play essential roles in driving corporate PES. This finding supports the dominant logic underlying the previous studies regarding the antecedents of PES, which emphasizes the role of managerial cognition is very important in predicting their environmental behaviors and performance (Bansal, 2003; Bansal & Roth, 2000; Gadenne et al., 2009; Peng & Liu, 2016; Severo, de Guimaraes, & Dorion, 2018; Zhang et al., 2015). Different from many previous studies, however, we stress the driving roles of ECA and ERA for PES because the PES not only involves pollution prevention but also carry the potential business opportunities.

In addition, considering the diversity of cognition, we examine the moderating effect of organizational cognition, EO, on the relationship between individuals' EA and PES. Our findings show that two of three EO dimensions (i.e., innovativeness and risk-taking) play a significant moderating role in the relationship between ERA/ECA and PES. In particular, the empirical findings suggest that the positive relationship between ERA (ECA) and PES is strengthened (weakened) for firms with a higher level of innovativeness or firms that are less oriented towards risk-taking. Our explanation for these results is that such interactive effects depend on whether the underlying logic between individual and organization cognition is compatible. In the case of the interaction between ERA and the innovativeness and risk-taking of EO, ERA is more related to long-term orientation and concerned with the social role of firms in a community or in society. This idea is consistent with innovativeness, which centers on long-term business success and possesses the goal of changing the world and improving the social welfare. Thus it can be seen that the interaction term between ERA and innovativeness is positively related to PES. In addition, executives with higher ERA are environmentally risk-avoidant, while an organizational risk-taking orientation emphasizes the pursuit of high-risky projects with high return rates. Hence, these two kinds of cognition naturally conflict with one another, so their interaction is negatively related to PES.

However, regarding the interaction of ECA and EO's innovativeness and risk-taking dimensions, in contrast to ERA, ECA focuses more on the economic return from environmental initiatives and emphasizes short-term profit maximization,

which is not compatible with the core ideas of an innovativeness orientation. Therefore, the interaction term of ECA and innovativeness plays a negative role in promoting PES. Interestingly, maximizing profit of ECA is just consistent with the concept of risk-taking, which stresses the high return rate in the context of running business. Thus, the interaction of ECA and risk-taking is positively related to PES.

Unexpectedly, the interactions between proactiveness and two dimensions of EA do not significantly affect PES. In other words, a substitutive or complementary effect between EO's proactiveness dimension and ERA/ECA on PES does not exist. One possible explanation for this finding is that proactive firms might be more likely to engage in pro-environmental behaviors regardless of the level of managers' awareness of environmental risk and environmental cost-benefit. The proactiveness thereby does not provide a particular boundary condition.

Theoretical contributions

The current study makes two main theoretical contributions by specifying and testing a model of individual-level factors that drive firms' PES. First, going beyond the dominant institutional and macro-level factors in explaining the firms' PES in developed countries (Aragon-Correa & Sharma, 2003), this study mainly examines the impacts of two activators of executives' EA, namely ERA and ECA, on firms' PES adoption, which significantly enriches the antecedents' family of PES. Notably, prior scholarship on managerial cognition largely assume that only altruistic value could motivate firms to go greener which is based on the premise that human beings' cognition of environmental issues is simplex. Unlike the past, this study insists on that individual cognition in nature is complex, and the compatible or even conflict types of cognition could reasonably co-exist within human beings or organizational values. Aligned with this thought, a good deal of environmental initiatives, so-called strategic environmental responsibilities combining with core business, not only improve environmental performance of firms but also build competitive advantage for firms by improving their production efficiency or product differentiation (Lantos, 2001; Orlitzky, Siegel, & Waldman, 2011; Porter & Van der Linde, 1995a; Porter & Van der Linde, 1995c). Thus, firms might conduct environmental activities due to self-interest or egoism (Peng & Lee, 2019). Our study has tackled all the problems

present in prior research by integrating and extending another dimension of EA, so-called ECA. Interestingly, the findings suggests that executives' ECA significantly influences the adoption of PES in the firms, and the regression coefficient of ECA is higher than that of the effect the ERA having on PES. Such result therefore shows that executives' ECA might be more significant than the ERA of managers in favour of firms' PES. Hence, our study is the first scholarship to address the complexity of top managers' cognition and their impacts on business activities.

Second, our study contributes to the PES literature by examining how the three dimensions of firms' EO, as a special kind of strategic orientation, interact with top managers' cognition in PES adoption. Concretely, we identify EO's innovativeness and risk-taking dimensions as two crucial moderators between ERA/ECA and PES. The findings imply that the positive relationship between ERA (ECA) and PES is strengthened for firms with a higher level of innovativeness and for those that are less oriented towards risk-taking. Thus, these findings highlight the roles of firms' EO sub-dimensions playing in facilitating or weakening the direct impact of EA on firms' PES. When the underlying logics of these types of cognitions are compatible, the interplay between them is positively associated with organizational behaviors. In contrast, the interplay between conflicting types of cognitions negatively affects the corporate actions. In this study, the underlying logic of managers' ERA and the innovative dimension of EO as well as that of ECA and risk-taking are consistent. One possible explanation is that both ERA and innovativeness paid great attention to the socially responsible role of modern enterprises in society with the long-term orientation. Conversely, executives possessing ECA concerns green product project with a short-term economic return priority (Peng & Liu, 2016), while innovativeness suggests that firms need to increase R&D investment that potentially sacrifice the short-term profits. Thus it can be concluded that the underlying logic behind ECA and innovativeness might be in opposition, and thus the interplay between these types of individual and organizational cognition is negatively related to PES.

Similarly, the accurate idea behind ERA and risk-taking slightly conflict with each another. Indicatively, ERA emphasizes risk avoidance through conducting the PES (Peng & Liu, 2016), while the risk-taking of EO stresses high margin projects with huge risk. Thus, the interplay of ERA and risk-taking is negatively related to

PES. Relatedly, both ECA and risk-taking are relatively short-term orientation and focus on the high return rate of risky projects. Hence, the interaction of ECA and risk-taking positively affects the firms' adoption.

In sum, this study considers PES's predictors of individual and organizational cognition simultaneously, and documents that the interaction of different cognitions is negatively or positively influencing the dependent variable like PES depends on whether their underlying logic is compatible. This study provides insights for future studies concerning the multiple types of cognition on firms' PES.

Managerial implications

This study also provides practical implications. First, top managers should pay more attention to environmental initiatives' economic return beyond avoiding the environmental-risk rooted in government regulation. Meanwhile, if the board of directors favors PES, they should appoint a CEO with a higher level of ERA or ECA to effectively improve the firm's environmental performance. Additionally, such a board should consider the cognitive consistency of its top management team and their firm's strategic orientation. Specifically, firms with strong innovativeness orientation should appoint top management team with higher ERA to drive PES, in contrast, firms with higher risk-taking orientation should appoint top management team with higher ECA to promote PES.

Second, our findings suggest that policymakers should promote policies to increase the managers' ERA and ECA. In the traditional framework, governments often adopt regulation to intervene in firms' environmental behaviors. According to our findings, governments may adopt other measures to improve managerial ERA and ECA, thus promoting PES. These measures can comprise conducting training of environmental knowledge for corporate executives and organizing case-sharing among firms that build competitive advantage by implementing PES. In addition, governments can subsidize individuals with higher ERA and/or ECA who have been entrepreneurs in environmental industries. Furthermore, governments can select executives in firms with R&D ratio to increase their ERA and choose high-profit industries to launch publicity campaigns intended to improve their executives' ECA.

In sum, policymakers should adopt different measures to help different types of firms build different cognitive configurations to enhance their PES.

Limitation and future research

The current study also has limitations that can be addressed in the future. First, this study has a cross-sectional design, which creates several limitations. Examples of such limitations is that we propose that both ERA and ECA are positively related to PES, the direction of causality might be reversed or be a two-way relationship. It is difficult to examine such issues with cross-sectional data. Furthermore, we use the self-reported data of a single set of respondents in this study, it is therefore improbable that CMB issues are perfectly eliminated by other pre and post-measure techniques. It would be beneficial for future studies to adopt the longitudinal design and/or utilize more sources of data in seek to eliminate the potential measurement error of CMB and further assess the causality of the hypothesized relationships in a comprehensive manner. Second, in our model, we limited the control variables to firm age and size, managers' gender, age, tenure, origin, the local living year and position. It would be worthwhile to expand the controlling variables to include other variables that possibly affect the managers' EA, such as the executives' positions in the certain industry associations and so forth. Third, this study is based on a less-developed province in China, and the findings thereby limits the generalizability in other contexts. Future studies could test the validation across various countries. Fourth, EO on the firm-level is regarded as a multidimensional construct in form of three independent dimension, innovativeness, proactiveness, and risk taking. However, EO also could be a unidimensional construct. Future research could treat EO as a unidimensional construct in the analysis.

Chapter 3: To Conform or To Escape? Top Managers' Political Ties and Proactive Environmental Strategy

Abstract: Corporate proactive environmental strategy (PES) has been received greater attention in academia and business practice. Previous research thereby discuss more about the drivers for firms' PES at different levels and in various context. Drawing on social capital theory, this study examines the main effect of top managers' political ties (PTs) on firms' PES, and the contingent role played by executives' environmental awareness (EA) in this direct relationship. Concerning about the both bright and dark sides of PTs, we propose two competing perspectives about top managers' PTs and firms' PES. Furthermore, the environmental risk awareness (ERA) and environmental cost-benefit awareness (ECA), two types of executives' EA, have been argued to play the different role in the relationship between PTs and PES. Using the survey data collected from 228 manufacturing firms in China, the empirical results contend that executives' PTs positively and significantly influence the firms' PES, and such positive relationship would be strengthened when the top managers have higher ERA but lower ECA.

Keywords: Political Ties; Proactive Environmental Strategy; Environmental Awareness; Environmental Risk Awareness; Environmental Cost-Benefit Awareness.

Introduction

The dramatic environmental degradation the world is currently facing has urged firms to utilize environmental strategies to manage its interface with the natural environment. However, environmental strategies may be both proactive and reactive. Proactive environmental strategy (PES) refers to a systematic patterns of voluntary practices, such as altering the product/process and preventing pollution at its source, going beyond regulatory requirements (Sharma, 2000). In contrast, firms adopting reactive environmental strategy (RES) merely follow the environmental regulations by taking end-of-pipe pollution control approach. Moreover, it is well-argued that global environmental crisis can be solved only if firms voluntarily and proactively implement environmental initiatives (Shrivastava, 1995). As such, scholarly interest in PES focuses on the central question of "what motivates PES?",

and most studies have explored the antecedents of PES at three distinct levels (Liu et al., 2015).

Indicatively, the first level emphasizes the external institutional or stakeholders' pressures from governmental regulations (Powell & DiMaggio, 2012), the concerns of local community (Banerjee et al., 2003), and the stakeholders' norms (Delmas, 2001; Henriques & Sadorsky, 1999) as PES's determinants. The second stream centers on the organization-level drivers in favor of a firm's PES pursuit, involving organizational capability (Aragón-Correa & Sharma, 2003; Sharma & Vredenburg, 1998), strategic orientation such as entrepreneurial orientation (EO) (Menguc et al., 2010), and governance structures such as family ownership (Etzion, 2007), director interlock (Ortiz‐de‐Mandojana et al., 2012), and the female representation in the top management (Kumar & Paraskevas, 2018). The third research line identifies the individual-level motivators of PES encompassing managerial interpretation of environmental issues (Sharma, 2000), managers' environmental-friendly mindsets (Liu et al., 2015), and CEOs' demographics (Lewis, Walls, & Dowell, 2014).

Although prior studies have provided important insights into PES's motivators at institutional-, organizational-, and individual-levels, however, there still exists the remaining research gap well worth filling up. First, the institutional-level predictors over-emphasize the isomorphism effect that firms respond to institutional pressures (Berrone et al., 2013) and thereby neglect to undermine the mechanism of how top managers perceive and interpret the surrounding institutional pressures into a focal firm. Along with this thought, such institutional perspective could not satisfactorily explain the internally driven motivation for firm's PES (Aragon-Correa & Sharma, 2003). Second, internal resources have been evidenced as the key organizational-level predictor of firm's PES. These studies, however, overlooked the managerial ties, a significant channel for developing firms' core capabilities (Gu, Hung, & Tse, 2008) and improving economic performance (Luo, Huang, & Wang, 2012), which could largely affect firms' adoption of PES. Especially in the transitional economies like China, firms are more likely to act strategically in managing their relationships with the government (Marquis & Qian, 2014) due to the significant role of political actors in allocating critical resources. Undoubtedly, obtaining such scare resources from governmental officials might be beneficial for firms' PES. Third, although the

investigation of micro-level factors would enable us to better understand the drivers behind the corporate environmental decision-making (Papagiannakis et al., 2014), these empirical studies tend to focus on factors endogenous to the executives (i.e., their background and characteristics). Since a firm is an open system and dependent on resources controlled by external stakeholders (Prefer & Salancik, 1978), hence, executives are more likely to establish the ties with the most salient stakeholders in seek to business success. Thus, it is no surprising that managers' boundary spanning activities, referring to so-called managerial ties, provide a pervasive means to make business strategy (Kotter, 1982). For instance, executives' networking with political actors, especially in the transitional economy like China, plays a significant role in affecting corporate strategy (Keim & Hillman, 2008). Therefore, the effects of top managers' personal networking with external entities on corporate PES have been largely ignored.

Related to managerial ties, it generally consists of ties with governmental officials (Luo & Chen, 1997), and executives' networking established with business leaders at other firms (Dubini, 1991). In essence, managerial ties, a critical type of social capital (Adler & Kwon, 2002), play a significant role in conducting business in transition economies such as China characterized by weak institutional support and distorted information (Peng & Luo, 2000). More importantly, when addressing the role of networking in the context of institutional voids, the majority of literature predominantly focuses on managers' political ties (PTs) (Faccio, 2006; Peng & Luo, 2000), and thereby takes a political embeddedness view of firms. Taking China, a government-dominated nation, as a typical example, PTs have been highly received strategic emphasis and valued by managers in an greater effort to run the businesses (Boisot & Child, 1996), as governments often embody more social capital that might be essential to firms' survival (e.g., governmental subsidies, business policies and industry development guidance) (Hillman et al. 2009; Hoskisson et al. 2000). Thus, effort to cultivate ties with officials at various levels of the government is the key strategy in seek to deal with environmental uncertainties (Prefer & Salancik, 1978) that derived from the government (Hillman, 2005).

Furthermore, in the transitional economies, the predominant form of PTs is a mechanism portrayed as clientelism (Wank, 1996) which reflects the high power

distance patron-client relationships. In term of this relationship, the entrepreneurial client has been placed in a subordinate position in contrast to the political patron. In line with this premise, it is not surprising that a good deal of firms act strategically in building their relationships with Chinese political actors. This is largely because PTs is capable of determining firms' business strategy and growth outcome (Keim & Hillman, 2008). By this very patron-client relationship, responding to government signals or meeting the governmental requirements is undoubtedly critical for firms.

Call to focus on the worldwide hot issue, like environmental issues in China, this nation faces huge challenges to cope with environmental protections which has become the dominant affair on political agenda (Yuan et al., 2006). In this scenario, governments at various levels have been setting different regulations and market-based approaches to compel firms to implement environmental practices (Lo & Fryxell, 2005). On the national level, the developing concept of "lucid waters and lush mountains are invaluable assets" has been further facilitated in the "Report to the 19th Communist Party of China National Congress". More significantly, China has definitely proposed the determination to realize 2030 Agenda for Sustainable Development, achieve the peak of CO_2 emission by 2030, and fulfill carbon neutral ahead of 2060. In this scenario, given the critical role of PES in reach the aforesaid goals in China, unknown is whether firms are reluctant or have greater willingness to adopt PES because of executives' PTs.

Overall, such a scarcity is extremely important to research. First, considering several scholars have highlighted the effects of managers' political connections on organizations' strategic decisions (Zhou, 2013), and executives' networking with governmental officials is firmly argued to influence organizations' strategic choices (Peng & Luo, 2000), little is known about whether and how the top managers' PTs impact business strategy (Zhu & Chung, 2014), let alone identifying the untouched and significant business strategy, PES. Second, political embeddedness view indicates that entrepreneurs' PTs yield not only opportunities but also the constraints for firms at a certain time (Okhmatovskiy, 2010). That is, executives' networking with political actors and governmental officials might act as a double-edged sword for business. As such, PTs possibly have both bright side and dark side in pursuit of PES. To illustrate, political-connected executives are more inclined to employ PES

in their firms, aiming at improving corporate reputation or enhancing firms' good image, facilitating the business-government relationship, and being elected to win a seat in Congress (Ma & Parish, 2006).

By contrast, some other politically connected managers have little incentive to voluntarily conduct environmental initiatives because of their easy acquirement of scarce resources like necessary operational licenses, permits and business project approval (Muttakin, Mihret, & Khan, 2018), obtaining political legitimacy, and even the avoidance of punishment for environmental pollution. In this case, top managers are inclined to adopt the passive end-of-pipe approach to meet environmental laws, or even worse ignore the negative impacts on the natural environment brought by their firms. Based on above assumptions, it is, therefore, worthwhile of addressing how the highly valued PTs affect firms' PES adoption in response to competing theories (i.e., "helping hand/bright side" or "grabbing hand/dark side"). Unlike past, this study explicitly examines how top managers' PTs influence the firms' PES.

In addition, recent development in social network theory has highlighted that the effectiveness of ties might be subject to important contingencies (Li et al., 2008), such as firm- and market- level characteristics, and study centering on contingencies is crucial in the environmental management field (Schmitz et al., 2019). For instance, an empirical study based on a sample from China has contended that PTs have a monotonic and positive impact on domestic firms' performance, which is contrary to the curvilinear effect for foreign firms (Li et al., 2008). In essence, managerial cognition and value are of significance in affecting business strategy (Hambrick & Mason, 1984), suggesting that executives tend to devise strategies based on their personal cognition (Gavetti, 2005). Due to the complexity of managerial cognition towards environmental protection, two extremely distinct environmental awareness (EA) of top managers have been explicitly categorized into environmental risk awareness (ERA) and environmental cost-benefit awareness (ECA) in Peng and Liu (2016)'s empirical work, which is built on the earlier argument from Gadenne et al. (2009). Specifically, executives' ERA reflects a certain extent to which they are conscious of negative environmental impacts caused by businesses, and the latter ECA refers to the executives' prediction of cost reduction and/or profitability improvement by means of environmental initiatives. Thus it could be seen that two

kinds of EA are derived from extremely distinct executives' cognitions. Therefore, two managerial cognitions, ERA and ECA, could be viewed as the contingency of PTs in the pursuit of PES, because of the respective underlying managers' values of moral and self-interest/value-driven. Even though scholars and practitioners insist that PTs matter, less examined is their contingent value (Gulati & Higgins, 2003). This unknown further motivates us to investigate the effectiveness or value of top managers' PTs in favoring firms' PES in the case of managers' two different EA, ERA and ECA.

China presents an important yet idiosyncratic setting to study this issue. First, as ties are deeply ingrained institution in China over 5,000 years (Li et al., 2008), and economic activities are embedded in the connections and ties of interpersonal relations (Uzzi, 1997), top managers' PTs (such as *guanxi* in China) thereby acts as an important means for Chinese firms to reduce the uncertainty and transaction costs, get access to valuable resources and government protection (Li et al., 2008), manage resource dependency and access to policymakers (Lux et al., 2011). Second, China's reform-era economic system has been viewed as a 'networked capitalism' (Boisot & Child, 1996), and Chinese government is of significance for business survival and success (Wu, Wu, Zhou, & Wu, 2012) and plays a critical role in driving business strategy (Xu & Liu, 2020), which causes most managers to refer to ties as the 'lifeblood' of business transactions (Xin & Pearce, 1996). Third, since 1978, China moved from planned economy to 'hybrid' economy, referring to both state and market simultaneously play the essential role in allocating resources and affecting firm behaviors (Zhang, Marquis, & Qiao, 2016). That means China has not become free markets yet (Zhang et al., 2019) due to less predictable and clear rules for market competition (Hoskisson et al., 2000). In this case, cultivating connections with politician and government officials have long been highly valued by Chinese entrepreneurs as a effective means of coping with institutional voids (Ge, Carney, & Kellermanns, 2019). Fourth, environmental issue has been on the political agenda in China (Yuan et al., 2006). The national governments at various levels heavily urge entrepreneurs to execute green behaviors (Lo & Fryxell, 2005). Thus, the governmental orientation to some extent can be appeared through firms' environmental responsible behaviors (Xu & Liu, 2020). In light of above, China, as

a government-dominated transitional economy with severe environmental problems, offers an ideal quantitative case in study.

To our knowledge, this study is the first to establish the linkage between PTs of executives and firms' PES. Our work contributes to the PTs and PES literature in the following ways. First, as several studies have examined the impacts of PTs on firm performance (Li et al., 2008), entrepreneurial investment (Zhou, 2013) and workplace fatalities (Fisman & Wang, 2015), this study enriches the PTs literature by assessing the direct linkage between such a type of micro ties and macro firms' PES, indicating a direct and unambiguous link of the PTs and business strategy that (Zhu & Chung, 2014) called for. Moreover, guided by two competing perspectives, our study clarifies both positive and negative roles of entrepreneurs' PTs playing in firms' PES. The empirical findings indicate that politically-connected executives are inclined to conduct PES rather than escaping from it. Second, setting on the PES strand, our efforts to look at a relatively larger sample, care in testing the micro-macro link of executives' PTs and firms' PES, and contend the positive utilization of this micro ties in terms of PES has represented that managers' PTs being an individual-level factor could be involved into the PES's antecedent family. Third, although scholars and practitioners state that ties matter, less addressed is their contingent value (Gulati & Higgins, 2003). In response to this call, this study thus suggests a necessity to examine two untested contingencies: top managers' ERA vs. ECA, which may alter the value created from PTs utilization in supporting the PES. Through a contingency perspective, our finding indicates that the impact on PES of ties with governmental officials is more powerful for managers who are ethically motivated in managing business-natural environmental interface.

The paper is organized as follows. In section 2, we review the literatures and formulate the hypotheses. The methodology and data collection are outlined in next section, followed by empirical results in Section 4. The final section draws the main conclusions and explores the implications.

Theory and Hypotheses

For reference, we proposed the conceptual framework as shown in Figure 3.1, delineating the relationship between top manager's PTs and firm's PES. Moreover,

this model integrates executive's EA, dividing into ERA and ECA as a contingency, into the abovementioned framework.

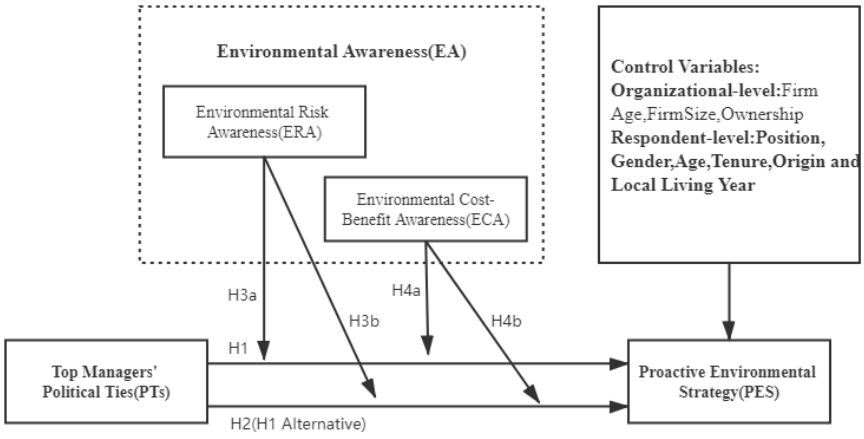

Figure 3.1 The conceptual framework

According to social capital theory, managerial actions are highly embedded in networks of interpersonal relations (Geletkanycz & Hambrick, 1997). As outlined earlier, PTs represents a firm's senior managers' personal networking with political actors, a variety of industrial bureaus, and regulatory authorities (Peng & Luo, 2000). Reliance on these relations helps obtain the scarce resources and information (Li et al., 2008), which is beneficial for cultivating competitive advantages and enhancing business performance by enhancing legitimacy. Despite these advantages, PTs are also associated with huge costs or downsides, such as government intervention on employment, blockage of information flow, reciprocal obligations, time-consuming, maintenance costs identified in the extant literature.

Therefore, to better understanding the bright and dark sides' effects of PTs, this study investigates the underlying mechanisms of PTs' positive and negative effects in promoting PES. Recent studies argue that ties' effectiveness might be contingent on important contextual factors (Li et al., 2008). This unaddressed gap motives our assessment of two distinct top managers' EA (ERA vs. ECA) as contingencies that enrich the studies by tackling "how ties matter, under what circumstances, to what extent, and in what ways" (Powell, 1996). Extending the previous argument, we presume that different managerial cognition in terms of environmental issues may play the distinct role in the PTs utilization for firms' PES.

Political ties and PES

The bright side of PTs

As Chinese government dominantly manages and distributes scare resources and approves business projects (Wang, Jiang, Yuan, & Yi, 2013), it has been found that political connections have an ability to obtain governmental assistance, such as low-cost bank loans (Faccio, 2006; Khwaja & Mian, 2005), tax break and subsidies (Bertrand, Kramarz, Schoar, & Thesmar, 2004; Wu et al., 2012), government contracts (Goldman, Rocholl, & So, 2009), and protection of property rights (Zhou, 2013). Moreover, it is also likely to influence government policies and regulations (Lester et al., 2008).

In line with earlier statement, PES consists of corporate actions going beyond compliance with environmental regulations and standard industry practices (Liu et al., 2015). Firms adopting PES should voluntarily integrate environmental concerns into entire business operations, consisting of innovation on manufacturing process and products (Klewitz & Hansen, 2014), and even local community (Jenkins, 2009), collaboration with a vast range of stakeholders (Liu et al., 2015). In essence, firms' PES adoption is generally regarded as a source of incurring additional costs that probably damages the short-term profits (Lioui & Sharma, 2012). Meanwhile, the environmental investments always have a long-term scope and financial returns from inputs would take a long time. As such, executives regard pro-environmental behaviors are at high expense without the apparent financial benefits. However, PTs are beneficial for firms to obtain lower bank loan rates (Faccio, 2006), contract enforcement, licenses, tax reductions, land, and subsidies (Guo, Xu, & Jacobs, 2014), which largely relax the financial constraints and lower firms' capital costs to environmental investments. Furthermore, good networking with governmental officials also could share the potential risks from eco-technological innovations with the government (Zhang, 2017).

In addition, manager's networking with politicians is beneficial for accessing the latest environmental policies, potentially helping grasp policymakers' intentions, understand environmental regulations, make effective environmental decisions, and cultivate the first-mover advantage. More importantly, PES execution would act as an effective means to access to the government authorities, which is beneficial for

maintaining and strengthening the business-government relationship and thereby enables firms to obtain the continued favoritism from government. Furthermore, the PES's benefits, including corporate reputation/image and well-improved relations with stakeholders, would bring praise to organizations together with executives directly (Zhang, 2017). As such, top managers favored by government and public tend to be elected in Congress (Ma & Parish, 2006), like winning a seat in National People's Congress (NPC), the only legislative body in China, or Chinese People's Political Consultative Conference (CPPCC) as an advisory board for government. Consequently, these managers have a tendency to adopt PES, as a channel to obtain political legitimacy and promotion (Li, Song, & Wu, 2015).

Meanwhile, the managers developing good network with government are more likely to receive the government and public attention. Thus their firms are highly subject to greater monitoring by the nations, especially in the countries where their government officials have stronger influences on businesses by their administrative power (Qian & Chen, 2020). For instance, manages keeping network with politician are generally required by public with the expectations of higher moral standards and natural social responsibility (Zhang, 2017). These invisible expectations might urge executives to proactively introduce PES which is able to strengthen organizations' alignment with public expectations and attention (Buysse & Verbeke, 2003).

In light of the arguments above, we hypothesize the following:

H1: Top managers' PTs are positively related to firms' PES adoption.

The dark side of PTs

PTs have been assumed as a double-edged sword since it could jeopardize the firm value (Chen, Li, Luo, & Zhang, 2017). In terms of PES, strong PTs have higher possibility of enhancing firms' political legitimacy by increasing their perceived conformity to regulations from government officials' point, which greatly inhibits the motivation to adopt PES (Su & Yang, 2018). Depending on existed legitimacy, or the government officials' assumption that firms' actions are desirable and proper, reduces the firms' need to demonstrate social worthiness by reacting to regulatory pressure via PES (Menguc et al., 2010).

Moreover, adopting PES requires huge investments in the processes, products, purchasing, employees' training and so on (Buysse & Verbeke, 2003). As economic return from such invests may materialize in the long term, and showing a corporate citizenship seems to be an effective way for those nonpolitical-connected managers (Wang & Qian, 2011), the politically-connected managers are more likely to carry out the reactive environmental initiatives (De Villiers, Naiker, & Van Staden, 2011) or even worse, regard their PTs as the insurance and protection umbrella to obtain the environmental licenses and permits, mitigate the impacts of negative events (Yu & Zheng, 2019), lighten penalties (Zhang, 2017), or escape punishment from irresponsible behaviors (Muttakin et al., 2018). For example, managers in heavy polluting firms might bribe local government officials through their PTs to get away with environmental regulations (Zhang, 2017). A notorious instance of treating PTs as the protective umbrella is Zijin Mining's environmental pollution event in 2010, which allowed businesses to evade emissions regulations.

Besides, the abuse of power led by managers' PTs is a serious issue facing regulators and business sectors (Luo, 2008). This implies that those managers could utilize PTs to informally influence authorities and avoid legal scrutiny (Wu, Johan, & Rui, 2016; Zhang, 2017). Reliance on strong PTs enables executives to lobby the officials to weaken environmental regulations (Zhang, 2017). For example, some unknown pollutants polluting the environmental that are strangers for policymakers (Lyon & Maxwell, 2008), executives might convey unverifiable or misleading information to policy makers that constrain regulators' ability to set tough standards. For example, politically connected firms only need to pay lower environmental levies and are less likely to face regulatory enforcement actions (Wu et al., 2016).

Furthermore, China has a top-down political structure with the local officials are appointed by the central government (Lin, Tan, Zhao, & Karim, 2015).Therefore, governors' primary interests are competing for political promotion (Lin et al., 2015), and their working achievements tend to be assessed by applying the gross regional product (GRP) as well as its growth rates. In this case, they are more likely to be incentivized to focus on the short-term local economic growth that is not compatible with long-term nature of organizations' PES. The local politicians also have strong incentives to prioritize the short-term economic objectives because of their regularly

positions rotation across the department and geographic regions (Sheng et al., 2011). Hence, they may achieve the goal of working career by putting economic growth ahead of environmental protection.

In light of the arguments above, we hypothesize the following:

H2: Top managers' PTs are negatively related to firms' PES adoption.

Top managers' EA as a contingency

Firstly, when top managers are fully cautious of the adverse impacts that firms acting on the environment, they are motivated to integrate environmental concerns into firms. However, because they are knowledgeable of environmental policies and the best environmental practices in industry (Gadenne et al., 2009), they would prevent environmental pollution in the first place rather than reactive end-of-pipe approach. Moreover, top managers' PTs could help firms to obtain the less taxation and subsidies (Bertrand et al., 2004; Wu et al., 2012), debt financing from national banks (Li et al., 2008), and direct cash (Faccio, 2006), which hugely reduces the firms' financial constraint in terms of environmental investments. In this case, PTs' usage is able to serve as the incentives for PES. Secondly, because politically connected firms may be subject to greater government monitoring, the moral managers would have willingness to implement PES to build corporate reputation, improve relations with stakeholders, and show corporate citizenship in the society. Hence, managers' ERA would strengthen the positive relationship between their PTs and firms' PES.

In contrast, we predict that managers' ECA would dampen the positive impact of PTs on PES. As ECA represents the belief that environmental initiatives would probably reduce the costs and/or improve profits, such self-interest executives are bound to place greater attention on potential economic benefits. In China, business environment tends to be highly complex and turbulent (Wang et al., 2013). Thus managers need to acquire the market-related information to cope with unexpected customer demands changing (Sirmon, Hitt, & Ireland, 2007) as well as the newest knowledge about rivals' behaviors and technologies to anticipate the competitive

scenario. It is unrealistic for ties with politicians to directly assist towards market change, as knowledge about customer demand and information about competitors.

Consequently, managers would decrease the dependence on PTs to acquire external resources in seek to pursue PES. Second, as previously argued, political-connected managers tend to be expected to have higher morality, and are under greater monitoring (Qian & Chen, 2020). Due to environmental management seems as a government-induced and desired activity in China, therefore, executives with ECA are less willing to adopt PES without a high possibility of financial returns. This implies that managers' public images and moral expectations arising from their PTs would not be greatly noted, and they might merely use the end-of-pipe approach to control the pollution, which could show their environmental image outside.

In light of the arguments above, we hypothesize the following:

H3a: The positive relationship between top managers' PTs and firms' PES adoption will be strengthened when top managers possess ERA.

H4a: The positive relationship between top managers' PTs and firms' PES adoption will be weakened when top managers possess ECA.

Despite advantageous aspects, ties with politicians sometimes have dark sides in functioning as forceful insurance and a protective umbrella in managers' eyes. In relation to environmental management, executives may utilize their PTs to migrate their businesses' negative impact (Yu & Zheng, 2019). Also, highly embedded firms might be shielded from legal enforcement in response to unethical behaviors (Wu et al., 2016), and managers may provide distorted information to alter environmental policies through lobbying politicians (Yan & Chang, 2018). Besides, stronger PTs and government intervention could transform the company culture into being more hierarchical and cohesive among functional departments (Chung, Wang, Huang, & Yang, 2016). Such corporate culture is likely to hinder the management vision and lead to a worse working atmosphere, particularly in Asian firms. Furthermore, other PTs' dark sides consist of governmental interference on recommending incompetent personnel in the firms (Chung, 2011), and blockage of information flow because of frequent position changes and rotations of political affiliates (Tsang, 1998).

Concerning the dark sides led by PTs, the abovementioned argument suggests that managers would not pursue the PES. However, we posit that executives with ERA would negatively influence the effects of PTs on PES adoption. First, as ERA refers to the managers' awareness of negative impacts on the natural environment result from their businesses, they thereby have strong impetus to adopt PES. While political affiliates commonly press firms to hire unqualified employees or employ unprofessional government bureaucrats in important positions (Chung, 2011), such as those posts in command of firms' resource allocation or strategic management. In shortage of competent employees, moral manages cannot execute their internal management capacity (Chung et al., 2016), and the operational efficiency is destined to decrease due to weak communication. Such overwhelming personnel assignment undoubtedly interrupts the organizations' PES proceeding. Second, although pivotal PTs are able to favor firms to take less social responsibility by functioning as firms' protective umbrella, managers with higher morality would not abuse PTs as an effective means of gaining weak legal enforceability despite of sensitively unethical events. By contrast, these managers are keen on taking environmental responsibility and resist the abuse of the PTs. Thereby, the higher ERA of managers is more likely to weaken the negative influence of PTs' dark side on firms' PES.

However, we posit that managers' ECA strengthens the negative effect of PTs on PES for the following reasons. Firstly, as such value-driven managers primarily emphasize economic interests, whereas relying on PTs could enable firms to get the nod of business projects even without disclosure of environmental costs and impacts (Lee & Ho, 2014). In doing so, firms' immediate profit acquisition would divert the attention from gaining profits via environmental investments. Secondly, the officials enjoy substantial discretion over policies implementation, and particularly have right to terminate firms' production if their activities disagree with government ideological preferences (Li, Meng, & Zhang, 2006). Because governmental officials' primary interests center on improving their political performance which is assessed by economic performance, thus executives with ECA must take officials' interface and have to meet the governmental needs. Thirdly, the employment of poorly skilled employees or unprofessional bureaucrats in firms could not predict market changes and adapts to technological progress (Sirmon et al., 2007), while executives with

ECA need more professional employees to anticipate the customer demand in future. Thus, the higher ECA of managers strengthens the negative effects of PTs on PES.

In light of the arguments above, we hypothesize the following:

H3b: The negative relationship between top managers' PTs and firms' PES adoption will be weakened when top managers possess ERA.

H4b: The negative relationship between top managers' PTs and firms' PES adoption will be strengthened when top managers possess ECA.

Methodology

Sample and data

To test our hypotheses, we distributed the surveys in Shanxi province situated in northern China. This region has been well-known for the natural resources such as coals (Zhang & An, 2018), and thereby the highly dependence of coal resulted in severe environmental degradation. Whereas the Shanxi government has been taking positive actions to handle the environmental pollution, and assigns the *Department of Ecology and Environment of Shanxi Province* to stringently monitor the firms' manufacturing processes. In this case, top managers put greater effort in protecting environment recently. Thus, Shanxi province provides an ideal sampling locale for the empirical context.

Data for this empirical study originates from a questionnaire-based survey. To ensure validity, the standard research procedure was followed. An English-language version of the questionnaire was initially developed and then, after a double back-translation process (Brislin, 1980) by two competent scholars, the Chinese version was formulated. Prior to data gathering, we conducted the in-depth interviews with 12 executives from Shanxi manufacturing firms, asking them to provide suggestions for the survey in the first two weeks of April, 2019. Based on their recommendation, we revised the indicators to better clarify each sentence. Upon two-round revising, we finalized the Chinese version and converted it into the ***Questionnaire Star***, a popular and effective online survey tool in China. To avoid social desirability bias, we phrased all questions with neutral words and promised respondents about the academic purpose of this survey, as well as the confidentiality of their responses.

General results were promised to provide to respondents, involving top managers, vice presidents, chairpersons, and general managers.

As a whole, we conducted two-round survey from June to November 2019, and between February and May of 2020. All the participated firms were approached by our industrial network and local governmental support. The first-round survey was administrated with 234 responses in the end. To check the robustness of the results of the first survey, we conducted a second survey and obtained 230 responses. In total, we received a sample of 464 responses. We kept only one of the records if more than one respondent from a given firm filled out a questionnaire and removed the responses with completion times of less than 180 seconds and missing data. In the end, we obtain 228 effective samples.

Measures

All measures were established by previous studies. Multi-item measures were built upon seven-point Likert scale (1 = strongly disagree; 7 = strongly agree).

Political ties. In China, network structures are regarded as business secrets, so most managers are protective of this sensitive information (Peng and Luo, 2000). According to Peng and Luo (2000)'s study, the PTs were measured by three-items involving the manager's utilization of connections with political leaders in various levels of government, official in industrial bureaus, and officials in regulatory and supporting organizations during the past three years.

Proactive Environmental Strategy. A three-item collected from Wagner and Schaltegger (2004)'s previous work was used to measure PES.

Environmental Awareness. We used six items from Peng and Liu (2016) to measure EA with two dimensions, namely, ERA and ECA.

Controls. We controlled for several firm-level and respondent-level variables based on prior studies and the potential disturbing variables influencing our study. The organizational-level control variables employed included firm age, measured by firms' operating time, and firm size which was gauged by the logarithm of the number of full-time employees, ownership (state-owned enterprise=1 and nonstate-owned enterprise=0). The respondent-level control variables included age, gender (1=male and 0=female), tenure (the number of years that the respondents had

worked at current firm), origin (native=1 and nonnative=0), local living years, referring to the number of years that respondents had lived locally, and position (i.e. Chairman, Secretary of the Communist Party of China (CPC) committee member, CEO or General Manager, Plant Manager, or Vice General Manager).

Validity and reliability

The validity and reliability of constructs are assessed through confirmatory factor analysis (CFA) using AMOS. The observed variables indicate an acceptable fit [$\chi 2 = 67.508$, $p = .033$; $\chi 2/df = 1.406$; GFI = 0.954; CFI = 0.991; IFI = 0.991; RMSEA = 0.042]. All the observed variables have a standardized loadings of more than 0.70 and are significant (Anderson & Gerbing, 1988). The average variance extracted (AVE) estimates were all greater than 0.50 (Bagozzi & Yi, 1988). These two findings supported the convergent validity of the constructs. All the constructs were measured by reflective instead of formative indicators, we used the Cronbach's α to evaluate the scales' internal consistency (see Table 3.1). All constructs have reliability coefficients of more than 0.70. Additionally, the composite reliability (CR) values are all above the threshold value of 0.70. Taken together, the results of these tests implied that the measures had acceptable convergent validity and reliability.

Table 3.2 shows the scale for the factor, the items' standardized factor loadings, and the Cronbach's α and CR values for each factor. All correlations between our study constructs were below |0.7|, demonstrating the distinctness of the measures and their discriminant validity. Besides, the correlations between two constructs are less than the square root of the AVE estimates of the corresponding constructs for all the pairs (Fornell & Larcker, 1981), indicating that these constructs had more internal correlation than external correlation and thus suggesting their discriminant validity. The results suggest that the constructs were distinct and that they exhibited evidence of discriminant validity.

Table 3.1 Construct measurement and confirmatory factor analysis results (N=228)

Constructs	Measuring items	Standardized loading	α	CR	AVE
	Enterprises will strictly implement cleaner production even without external supervision.	0.888	0.890	0.896	0.743

Proactive Environmental Strategy (PES)	Outlook on green development has incorporated into enterprise culture.	0.911			
	Enterprises input a large quantity of resources in development of environmental protection technologies.	0.781			
Political Ties (PTs)	Top managers at our firm have maintained good personal relationships with officials in various levels of government.	0.946	0.954	0.954	0.875
	Top managers at our firm have developed good personal or social ties with officials in industrial administrative departments in charge.	0.948			
	Top managers at our firm have developed good connections with officials in regulatory and supporting organizations such as tax bureaus, state banks, and commercial administration bureaus.	0.911			
Environmental Risk Awareness (ERA)	Top management team pays much attention to adverse impacts of our firm's behavior on the natural environment.	0.858	0.896	0.898	0.747
	Top management team is very clear about how environmental legislation is relevant to our business.	0.861			
	Top management team is very clear about what represents "best environmental practice" in our industry.	0.873			
Environmental Cost-Benefit Awareness (ECA)	Top management team thinks that adopting environmental initiatives can improve sales revenue.	0.806	0.917	0.921	0.796
	Top management team thinks that adopting environmental initiatives can reduce costs.	0.921			
	Top management team thinks that adopting environmental initiatives can improve production efficiency.	0.943			

CFA Model Fit Summary: $\chi 2 = 67.508$, $p = .033$; $\chi 2/df = 1.406$; GFI = 0.954; CFI = 0.991; IFI = 0.991; RMSEA = 0.042

Notes: All factor loadings of the CFA are statically significant. α = Cronbach's alpha; CR = composite reliability; AVE = average variance extracted.

Assessing common method bias

As the independent and dependent constructs are measured in the questionnaire completed by a single respondent, common method bias (CMB) might be a serious issue. To control the CMB, we conducted design-related procedures and statistical techniques (Podsakoff, 2003).

Of the design-related procedural methods, we followed three steps. First, we discussed our questionnaire with 12 executives and two experts. During this process, we refined the indicators to ensure all the items were clear enough to respondents. We also prescreened the potential respondents to ensure they were knowledgeable

about environmental management. Second, the survey questionnaire was shortened to a reasonable length, and the questionnaire was distributed anonymously. We also promised that the data would be only used for academic research, and the findings would be sent to the respondents. Third, this survey was distributed relied on our social ties with the managers in target firms and received the support of the local government officials. The trust stemming from the personal ties between researchers and the respondents, as well as the authority, ensured the quality of our survey.

Two statistical control methods are conducted to measure the extent to which CMB is probably to affect our results. Using Harman's single factor test, the results show that the first factor before rotation accounted for less than half of the total variance, indicating that there is no severe CMB problem. Also, the model with the unmeasured latent methods factor is found to have better fit indices than the actual measurement model. In sum, these findings show that the CMB was not a problem in this study.

Results

The descriptive statistics and correlations for our study variables are presented in Table 3.2. A multiple ordinary least squares (OLS) regression analysis was conducted to test hypotheses. Table 3.3 shows the empirical results from regression analysis. We first entered the control variables in model 1, and model 2 adds the PTs as independent variable to examine its direct effect on PES. Model 3 included the ERA and ECA as moderating variables. Model 4 included the interaction variables to test the moderating effects of ERA/ECA on the relationship between PTs and PES.

To reduce the potential of the multicollinearity, we mean-centered independent and moderating variables before the creation of the interaction terms (Aiken et al., 1991). In terms of the regression models, we examined the variance inflation factors (VIFs), and the largest VIF was no more than 3 (below the maximum acceptable value of 10) and also the average VIF was about 1.5. Thus, there was no severe problems involving multicollinearity. Regarding the endogeneity, Ramesy (1969)'s omitted-variable regression specification-error test was conducted and the results showed that P-value for Table 3.3 was about 0.0627, suggesting that it was not

significant at 5% level. Hence, the regression models have no endogeneity from the point of important missing variables.

Recall that our hypotheses focus on how firms' PES is affected by managers' PTs, and whether ERA and ECA of executives influence the relationship between PTs and organizations' PES. H1 proposes that PTs is positively related to PES, and H2 is the competing hypothesis with H1. As Table 3.3 shows, there is a significant and positive effect of managers' PTs on firms' PES in Model 2 (β=0.402, $p<0.001$), supporting H1 instead of H2, which predicts that top managers are more likely to adopt PES regarding their stronger networking with politicians. H3a proposes that ERA will strengthen the bright effect of PTs on PES, and H3b hypothesized that the ERA is able to weaken the dark effect of PTs on PES. H4a proposes that ECA will weaken the PTs' bright effect in favor of firms' PES, and H4b hypothesized that the dark effect of PTs on PES would be strengthened by ECA. In model 4, the interaction of PTs and ERA shows a positive effect on organizations' PES (β=0.135, $p<0.05$), which supported the H3a. In contrast, the negative interaction effect between PTs and managers' ECA (β=-0.138, $p<0.05$) has indicated that the effect of managers' PTs on PES adoption declines when managers' ECA is much higher. Thus H4a is supported.

Table 3.2 Descriptive statistics and correlation matrix (N=228)

Constructs	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1 PES	5.86	0.96	0.862[a]															
2 PT	5.16	1.29	.391**	0.935														
3 ECA	5.38	1.15	.508**	.227**	0.864													
4 ERA	6.12	0.80	.510**	.338**	.410**	0.892												
5 Firm Age	14.74	11.64	-0.007	0.075	-0.064	0.040												
6 Firm Size	4.63	1.79	0.027	.167*	-0.029	0.116	.438**											
7 State-owned enterprise	0.19	0.40	-0.034	0.088	-0.043	0.085	.344**	.499**										
8 Chairman	0.16	0.37	-0.014	-0.021	0.007	-.181**	-0.069	-0.058	0.002									
9 Secretary	0.02	0.15	.137*	0.067	-0.032	0.091	0.068	0.010	0.079	-0.065								
10 CEO or GM	0.29	0.46	0.087	0.070	-0.057	0.028	-.145*	-0.091	-.145*	-.200**	0.035							
11 Plant Manager	0.20	0.40	0.038	-0.055	-0.062	0.071	0.066	-.164*	-0.080	-.218**	-0.001	-0.084						
12 Vice GM	0.20	0.40	0.002	0.063	0.034	0.082	0.066	0.097	0.093	-.185**	0.001	-.320**	-.194**					
13 Gender of Respondents	1.00	0.07	0.013	.198**	0.119	-0.018	0.050	0.031	0.032	0.029	0.010	0.043	-.132*	0.033				
14 Age of Respondents	43.75	9.10	0.008	-0.002	-0.112	-.147*	0.048	0.032	0.038	.182**	0.087	0.037	-0.029	0.026	-0.002			
15 Tenure of Respondents	6.64	5.06	-0.062	-0.014	-0.020	-0.100	0.096	-0.013	-.159*	.184**	-0.055	-0.005	-0.074	-0.023	-0.005	.286**		
16 Origin of Respondents	0.72	0.45	0.018	0.083	0.091	-0.004	-0.033	-.179**	-.313**	0.056	0.027	-0.047	0.022	0.065	0.106	0.120	.133*	
17 Local live Years	26.77	16.80	0.009	-0.015	-0.037	-0.078	0.042	-0.078	-0.090	0.118	0.111	-0.004	-0.037	0.084	0.078	.430**	.178**	.465**

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

[a.] The square root of the average variance extracted (AVE) for each construct is along the diagonal (in bold).

Table 3.3 Multiple regression analyses for testing hypotheses (DV=PES; N=228)

Predictors and controls	**Model 1**	**Model 2**	**Model 3**	**Model 4**
Firm Age	-0.010	-0.008	0.025	0.024
Firm Size	0.090	0.022	0.017	0.014
State-owned enterprise	-0.078	-0.095	-0.103	-0.110†
Chairman	0.064	0.048	0.087	0.095
Secretary of CPC Committee	0.139*	0.113†	0.104*	0.107*
CEO or General manager	0.117	0.066	0.096	0.104†
Plant Manager	0.079	0.067	0.068	0.063
Vice president	0.064	0.028	0.018	0.013
Gender of Respondents	0.012	-0.058	-0.062	-0.109†
Age of Respondents	0.005	0.006	0.079	0.072
Tenure of Respondents	-0.070	-0.068	-0.065	-0.064
Origin of Respondents	0.015	-0.045	-0.080	-0.110†
Local living Years	-0.014	0.026	0.039	0.056
PT		0.402***	0.222***	0.225***
ECA			0.371***	0.379***
ERA			0.292***	0.316***
ECA*PT				-0.138*
ERA*PT				0.135*
F Value	0.709	3.496***	11.000***	10.314***
R^2	0.041	0.187	0.455	0.470
Adjusted R^2	-0.017	0.133	0.413	0.425
ΔR^2	-	0.146	0.268	0.016
ΔF	-	38.125***	51.844***	3.085*
VIF-max	1.593	1.608	1.619	1.628

***. Correlation is significant at the 0.001 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

†. Correlation is significant at the 0.1 level (2-tailed).

Discussion and Conclusion

Prior conceptual and empirical work demonstrates a number of personal-, firm- and institutional-level determinants of firms' PES. However, our study advances extant PES studies by speculating managers' PTs as a potential antecedent of PES. To make a better understanding of the bright side and dark side of PTs and determine the processes linking PTs to firms' PES in transitional economies, we thereof have examined the underlying mechanism of PTs' effects from its bright side and dark side. In addition, to capture the nature of relationship between PTs and PES pursuit, we draw on a contingency perspective in our examination of the moderating roles of managers' EA that explicitly includes ERA and ECA (Gadenne et al., 2009; Peng & Liu, 2016). We select China as our research setting because the heavy influence of government and the longer tradition of tie utilization make PTs as the 'lifeblood' for business in China (Xin & Pearce, 1996). Furthermore, the rapid development of China's economy as a miracle has come at the cost of environmental degradation over past decades (Qian & Chen, 2020). Guided by the conviction "lucid waters and lush mountains are invaluable assets", the firms are largely obliged to take more environmental responsibility. As whole, China presents an ideal context to study the relationship between PTs and PES.

Overall, our results endorse that managers' PTs positively contributes to firms' PES pursuit, indicating that Chinese manages tend to make good use of their PTs to obtain substantial benefits and favoritisms from the government (Faccio, 2010). We further find that managers' ERA and ECA have different moderating effects on the impacts of PTs on PES. This finding is consistent with the arguments that PTs is the context specific (Sun, Mellahi, & Wright, 2012) and the effectiveness/value of ties depends on important factors (Li et al., 2008). Specifically, owning ERA by managers plays a significant role in facilitating the positive relationship of their PTs and organizations' PES, whereas the managers' ECA have a negative impact on the direct effect. Our findings offer a refined understanding of the contingent value of ties, which is less addressed and examined (Gulati & Higgins, 2003).

Theoretical contributions

The first major implication of our study is that we advance the knowledge of antecedents of firms' PES in China by unveiling the critical motive of managers' PTs. Since these two constructs have been previously studied in individual research domain, our empirical study explores the relationship between executives' PTs and firms' PES adoption, and the result shows that the business leaders' PTs could drive firms to embrace the PES. Thus, this study significantly enrich the family members of PES's antecedents.

Second, standing on the side of PTs, previous works largely focused on the link of PTs and firms' market value or performance (Peng & Luo, 2000), and the inherent connections of executives' PTs and business strategy has been overlooked (Zhu & Chung, 2014). This scant research is surprising given that executives' PTs has been ensured to influence the strategic decisions (Faccio, 2006; Zhou, 2013). As such, this timely study also advance a new perspective that locates the crucial outcome of managers' PTs, namely the firms' PES.

Third, through a contingency perspective, this study further identifies under what circumstances managerial PTs are more powerful with respect to firms' PES adoption. In response to the recent call that effectiveness of ties might be contingent on particularly contextual factors (Li et al., 2008), and research on contingency is of significance in the environmental management field (Schmitz et al., 2019), two activators of managers' environmental awareness (EA), namely executives' ERA and ECA, have been employed as the contingencies in the direct linkage of PTs and PES. By doing so, our results thus suggest that managers' PTs could strongly drive firms' PES when managers possess the higher ERA, whereas the effect of PTs on PES becomes weaker as managers are in possession of ECA.

Fourth, focusing on the context of China, government-business relations, as so-called *guanxi*, might be more significant than that of other countries (Farashahi & Hafsi, 2009). During its transitional period, managers' networking with government officials is prevalent because of the weak market supporting formal infrastructure. Regarding the environment protection, Chinese government has hugely stressed the developing concept named "lucid waters and lush mountains are invaluable assets". However, as PTs constitute a double-edged sword for conducting the business, the deep insight from both bright and dark side might be beneficial for undermining the

mechanisms of how PTs influences the PES. Importantly, our findings theoretically and empirically highlight the positive role of managers' PTs in motivating PES.

Managerial implications

The findings of the study reveal some key managerial implications. First, firms in transitional economies would greatly regard the political networking as a means for attaining useful assistance from the government. For example, networking with politicians could minimize the uncertainty and transaction costs, manage resource dependencies, easily get access to rare resources like debt financing, lighter taxation, bank loan with low interests, and relaxed regulatory oversight (Faccio, 2010; Lux et al., 2011). As such, for those managers lack informal government support in the context of transitional economies could positively cultivate and value the utilization of their interpersonal ties with government officials, with the purpose of succeeding the business. In China, formal institutions, including the regulations or laws, market competition and environmental uncertainty are not functional to the executives and businesses (Ge et al., 2019), the underdeveloped legal framework necessitated a strategy centered on developing PTs for the entrepreneurs (Peng & Luo, 2000). For Chinese practitioners interested in effectively implementing PES, they need to well establish and utilize their informal personal relations with political actors at various level of government and administration bureaus. By doing so, they are able to obtain valuable information, scare resources and the newest environmental regulations in relation to PES implementation.

Second, for government officials in China, though they might create positive value of PTs in providing critical resources and timely information for the connected managers, they could not threaten managers' control of business and exert political pressure on entrepreneurs for the sake of seeking rents (Faccio, 2006). In contrast, they need to elect and absorb the environmental responsible executives in two types of political congress, the National People's Congress (NPC), the only legislative body in China, or the Chinese People's Political Consultative Conference (CPPCC), an advisory board for Chinese government. Gaining a position in congress, those managers are more likely to make their firms go greener as a pioneer in certain industry, which would consciously influence other peers' environmental behaviors.

Third, consistent with the argument that environmental management is not a universal prescription or a one-size-fits-all approach (Brammer & Millington, 2008), our data suggests that the moral managers are more likely to strengthen the effects of PTs on PES. Thus, for policymakers in the environmental management domain, the best approach to further environmental proactivity would be to inspire politically connected managers to unconsciously integrate environmental concerns into their business operation by undermining the incentive environmental subsidy mechanism. Meanwhile, to ensure the greater willingness of taking pro-environmental behaviors, policymakers could strive to stimulate managers to adopt proactive environmental practices in seeking for the cost reduction and long-term profitability to some extent.

Fourth, with regard to concrete environmental policy designing, policymakers should continuously extend their expertise and knowledge in environmental domain. Given the positive impact of PTs on PES, policymakers could appoint some greener firms' managers to effectively coordinate to participate the environmental standard setting, relying on their broad knowledge of particular pollutants. These managers' ties with officials are more beneficial for strengthening environmental criteria in order to assess the performance of government officials and incorporate quantifiable metrics to evaluate environmental conditions. As such, these environmental policies would be more stringent for politicians to approve environmental licenses, permits, and business projects, and in turn firms' environmental proactivity will be improved.

Limitation and future research

The study's limitations provide opportunities for future research. First, we rely on top managers' self-reporting by asking whether they have utilized personal ties, networks, and connections with external officials to measure PTs in our work. Such kind of PTs highlights the common relationship between business managers and politicians, which is costly and time-consuming to establish and maintain. However, corporate managers and politicians might be university classmates, best friends (Yu & Zheng, 2019), or involving family relationships, which to a larger extent may blur the boundary between governmental officials and business leaders. These different ties may bear different strengths and hence, may have distinct effects on firms' PES.

Thus, it would be useful to find ways of identifying these particularly hidden ties, which deserves in-depth investigation of its impacts on firms' PES. Second, besides the informal social relationships, boundary-spanning links between executives and political actors might generate the formal PTs such as managers serving officially in government organizations or vice versa. In stark contrast to informal PTs, formal interlocking PTs tend to be strong because the same person occupies two positions in business and political spheres (Lester et al., 2008), resulting in greater tie accountability by limiting principle-agent conflict (Mahmood, Chung, & Mitchell, 2017). Thus, future studies of formal interlock PTs might have different effects than informal PTs in respect of PES. Third, the findings of this study are context-specific. In order to generalize the empirical results, future research could examine the micro-macro link in other major transitional economies, such as Russia or India. Fourth, some researchers insist that the utilization of ties is in fact a dynamic process (Chen & Chen, 2004), suggesting that a longitudinal studies on the complex link between managerial PTs and PES should be moved a further step to carry on.

CONCLUSION

To date, a PES is defined as the anticipation of environmental regulations and social trends, and the alternation of business operations, processes, and products to prevent negative environmental impacts (Aragón-Correa & Sharma, 2003). Given the possibility of PES to solve the global environmental issues (Shrivastava, 1995), scholarly interest in examining "*why*" some firms embrace PES has been growing substantially during the last two decades. A better Understanding of the motives that impact a firm's pursuit of PES is critical for two reasons. First, this understanding could assist organizational theorists to predict firms' voluntarily ecological behavior. For example, if corporates conduct environmental practices merely to meet the legal obligations, then firms would engage in those mandated activities (Bansal & Roth, 2000). Second, this understanding could expose the mechanisms that foster greener organizations, allowing managers and policy makers to determine the efficacy of command and control mechanism, and market measures.

Overview of this thesis

Researchers have studied the antecedents of PES at different levels of analysis and in varied context (Sharma & Sharma, 2011), through the lens of various theories and paradigms (Etzion, 2007). One camp based on the institutional and stakeholder theories explored the significant roles of government-enforced regulations (Powell & DiMaggio, 2012), stakeholder norms (Darnall et al., 2010; Henriques & Sadorsky, 1999), and the concerning of local community (Banerjee et al., 2003). Another camp investigated endogenous motives of PES at firm- and individual-levels. On the firm-level, organizational capability (Aragón-Correa & Sharma, 2003; Sharma & Vredenburg, 1998) such as organizational learning, shared vision, cross-functional integration, strategic proactivity, and continuous innovation (Aragón-Correa, 1998; Christmann, 2000; Hart, 1995; Sharma & Vredenburg, 1998) has been identified as critical drivers of a firm's PES. Research exploring the individual factors shows that managers' mindsets (Flannery & May, 2000), environmental leadership (Egri & Herman, 2000), managers' interpretation of environmental issues (Sharma, 2000), and business ties (Jiang et al., 2020) are associated with firms' PES.

Although a notable progress has been made in investigating the PES's drivers at institutional-, organizational-, and individual-levels, their ability to predict PES is limited. First, the institutional perspective focused primarily on the influence of exogenous factors, and inevitably over-emphasize the isomorphism effect (Berrone et al., 2013). Such perspective neglects the underlying mechanisms of how manager develops and transfers their subjective representations of external pressures into the focal firms. For example, the firms in an emerging market like India (Singh et al., 2014), lack the incentives to adopt PES because of the governmental pressures. The study conducted by Wang et al. (2018) implied that the existence of institutional void and the priority of economic development in local government have relaxed Chinese firms' environmental burden. Furthermore, the variability in the corporate environmental strategy (CES) has been shown among firms involving in similar institutional context (Aragón-Correa, 1998) and within the same industry (Sharma & Vredenburg, 1998). Thus it can be seen that neither institutional nor stakeholder perspectives could explains the internal motivations for a firm's PES, as pro-environmental initiatives extend much beyond the mandated requirements.

Second, firm-level's motivators, such as organizational capabilities (Aragón-Correa & Sharma, 2003), have put more emphasis on internal resources possessed by focal firms currently. However, building good relationships with suppliers might help the focal firm obtain the quality materials, better services, and timely delivery. The connection with buyers might spur customer loyalty, sales volume, and reliable payment (Peng & Luo, 2000). Moreover, getting access to government assistance is seen as important conduits on firms' core capabilities (Gu et al., 2008) and economic performance (Luo et al., 2012). Thus, the social capital embedded in organizations from resource-based view can be viewed as a rare, unique, and intangible resources leading to significant advantages (Tsang, 1998), which might play a more crucial role in affecting PES. For example, corporate managers' networking with political actors, particularly in transition economy such as China, significantly influence the business strategy (Keim & Hillman, 2008). Yet research examining the drivers on the firm-level need to emphasize the effect of boundary spanning activities, referred to so-called managerial ties, on firms' PES.

Third, calling for the microfoundations of corporate sustainability (Aguinis & Glavas, 2012) and greater attention should be given to the individuals who should be responsible for the environmental decision-making (Papagiannakis et al., 2014), scholars have long argued for a significant relationship between managers' beliefs and values towards PES. Because managers are likely to devise strategies based on their cognition (Gavetti, 2005), and profiles of organizations to some extent reflect the characteristics and processes of executives (Hambrick & Mason, 1984), these studies tend to explore endogenous factors of top managers (i.e., their background and personal characteristic). However, using demographic data as proxies for testing managerial cognition of executives in these amplified studies is seemly limited in providing insights into knowing the effects of managerial cognition on the decision-making. Moreover, previous studies paid little attention to the constraints imposed by organizational cognition, which can be reflected as company culture or strategic orientation like entrepreneurial orientation (EO). The most cited work from Aragón-Correa and Sharma (2003) indicated that the corporate approach to prevent pollution need to be integrated into the entrepreneurial dimension of the firm. In other words, firms are not likely to pursue the PES unless they emphasize entrepreneurial activity.

Along with aforesaid arguments, this thesis built on three separate articles is in an effort to examine the antecedents of PES, filling out the worthwhile gaps on this subject. *The first study* examines the differential incentives for PES in ten case firms with three different ownership. *The second study*, drawing on upper echelons theory, investigates the direct impact of two dimensions of managerial environmental awareness (EA) on PES, and the moderating role of three individual dimensions of firms' entrepreneurial orientation (EO), namely, innovativeness, proactiveness, and risk-taking. Based on social capital theory, *the third study* examines the effects of managers' political ties (PTs) on PES, and integrates two dimensions of managers' EA, ERA and ECA, as the contingent roles in the analysis.

Moreover, China, the second largest economy in the world, presents an ideal setting for this study. First, a number of studies tend to examine this topic in Western societies (Delmas & Toffel, 2008). Since it is well-suggested that the antecedents of PES have the different influence on PES in China versus Western countries (Walker et al., 2014), due to the significant role of traditional cultural, historical factors and

market systems (Li & Peng, 2008). Second, increasing concerns of environmental degradation have emerged as a 'hot' issue in business practice and academic settings in China (Peng, Tu, Elahi, & Wei, 2018). In March 2019, the Second Session of the 13th National People's Congress has further advocated the "*green development*", and addressed the "*corporate social responsibility*" (CSR), as Premier of the State Council Li stated in "*REPORT ON THE WORK OF THE GOVERNMENT*":

> *"Green development is a critical element of modernizing an economy; it is also a fundamental solution to pollution. As the primary actors in pollution prevention and control, enterprises must fulfill their responsibility of protecting the environment according to law."*

Therefore, firms should fulfill their civic responsibility by minimizing negative environmental impacts (Walker, Di Sisto, & McBain, 2008). Third, China might embody more useful social capital in compensating for its weak institution system, because the Chinese government has maintained a central role in guiding economic transition (Luo, 2003). It is thereof no surprising that Chinese managers refer to ties as the "*lifeblood*" of business (Xin & Pearce, 1996). As Environmental issues have currently been on the political agenda in China (Yuan et al., 2006), business leaders are bound to react to governmental signals to protect the environment.

Theoretical contributions

This thesis makes threefold contributes. First, the industry peer, as suggested in the first study, and managers' PTs, as well as two dimensions of EA, namely ERA and ECA in the subsequent two studies have been indicated to play the critical roles in affecting PES, adding the new variables in the family units of PES's antecedents. Specifically, our first analytic induction applied to data collected from 10 case firms revealed the key motivation for private-owned enterprises (POEs) is executives' long-term orientation, whereas guanxi with local government would incentivize the PES pursuit of provincial state-owned enterprises (SOEs) in contrast to competitive motivation in another SOE affiliated to state-owned key enterprise. Two foreign-invested enterprises (FIEs) largely motivated by ecological responsibility are bound to adopt PES, whereas another FIE is in favor of PES merely because of competitive advantage. Upon comparing with prior studies, the differences have been suggested

as (1) whether the positive impact of competitiveness on firms' PES built on the premise of being motivated by ecological responsibility, and (2) whether PTs plays as the driver or barrier for firm's PES. Moreover, our second study offers an explicit analysis of the impacts of ERA and ECA, and of the ways in which three dimensions of EO (i.e., innovativeness, proactiveness, risk-taking) moderate the connections between ERA/ECA and PES. With respect to PTs, it has been implied to positively affect PES, rather than the negative role of PTs playing in PES. By introducing the contingent roles of ERA and ECA, the findings acknowledge that managers' PTs can strengthen firms' PES when managers are ethical and moral, whereas the impact of PTs on PES becomes weaker as managers possess competitive motivation.

Second, our paper advances the managerial cognition theory by distinguishing between two important types of managers' EA, ERA and ECA. Prior studies on EA largely assume that human being's cognition is simplex and only altruistic values could motivate firms' greener practices. Thus, existing studies tend to treat EA as a one-dimensional construct. In nature, the complexity of individual cognition allows the conflict or compatible types of cognition to co-exist within one individual values. The two types of EA have distinct contents, work through different mechanisms and thus, vary in the degrees of their influential effects on PES. Our empirical findings further suggest that ECA works better than ERA in driving firms' PES.

Third, our study offers an integrative view on the individual and organizational cognitions by showing that the two positive relationships between ERA (ECA) and PES is strengthened for firms with higher innovative orientation and for those that are less oriented towards risk-taking. Empirical findings imply that the impact of individual cognition on business strategy is constrained by organizational cognition, depending on the contradiction or compatibility between their underlying logics. An explanation of aforementioned mechanisms is that the underlying logic of ERA and innovativeness of EO as well as that of ECA and risk-taking is consistent, while the ideas behind ERA and risk-taking, as well as those behind ECA and innovativeness is slightly conflict with one another.

Finally, we enrich the extant studies on PTs by substantiating the contingencies that may alter the values of ties, namely, managers' ERA and ECA. Although prior studies indicate that the value of ties is contingent on firm- and market-level features,

such as the firm ownership (i.e., domestic vs. foreign firms), and market forces (i.e., market competition and uncertainty) in Li et al. (2008)'s work, studies addressing the contingency on the individual level are few. Our work indicates that the effect of PTs on PES is contingent on the managerial cognition toward environmental issues. Employing two distinct contingencies, executives' ERA and ECA, into the direct micro-macro linkage, our results suggest that managers' PTs can strengthen firms' adoption of PES when those managers own greater ERA, while such main effect will become weaker as managers possess higher ECA.

Managerial implications

This thesis has some important practical implications. First, managers' long-term orientation is significantly related to private-owned firms' PES. Therefore, for those leaders of private-owned or family business pursuing long-term development need to align environmental orientation to their strategic values and visions salience. As industry peer plays an influential role in affecting firms' PES, the environmental policymakers could encourage the leading or listed firms to go greener first, through which the entire industry might become environmental-friendly. Moreover, though the motive of competitive advantage is related to one foreign corporation and a state-owned enterprise, it is therefore feasible for managers to regard PES as opportunity (Sharma, 2000). That is, managers could be inspired of seizing market opportunities from addressing environmental issue (Margolis & Walsh, 2003).

Second, executives should place more emphasis on environmental initiatives' economic return beyond merely avoiding environmental risk rooted in government regulation. In other word, if the board of directors prefer PES, they should appoint a special CEO with greater ERA or ECA to improve environmental performance. Moreover, concerning the cognitive consistency of managers and the firm strategic orientation need to be emphasized. For those firms being innovative, they could arrange executives with higher ERA to execute PES, whereas for firms with higher risk-taking, appointing managers with higher ECA to promote PES would be more appropriate. On the side of policymakers, governments could take some measures to improve executives' ERA and ECA, such as environmental training for corporate executives and regularly organizing the case-sharing of firms that benefit from PES.

More importantly, subsidizing someone possessing higher ERA or ECA to be an entrepreneur in environmental industries.

Third, for Chinese practitioners interested in effectively implementing PES, they need to well establish and utilize their informal personal relations with political actors. While for government officials in China, though they might create positive value of PTs in providing critical resources and timely information for the connected managers, they could not threaten managers' control of business and exert political pressure on executives for seeking rents (Faccio, 2006). Conversely, they can absorb environmental responsible executives in two types of political congress, the National People's Congress (NPC), the only legislative body in China, or the Chinese People's Political Consultative Conference (CPPCC), an advisory board for Chinese government. Consistent with the state that environmental management is not universe or a one-size-fits-all approach (Brammer & Millington, 2008), and aligned with the suggestion that moral managers are more likely to strengthen the effects of PTs on PES, policymakers in the environmental management domain can inspire politically connected managers to integrate the environmental concerns into their firms' operation relying on the incentive environmental subsidy mechanism. Moreover, policymakers should continuously extend their expertise and knowledge in environmental domain, and appoint some greener firms' managers to effectively coordinate to participate the environmental standard setting, relying on their broad knowledge of particular pollutants. As such, these environmental policies would be more stringent for governmental authorities to approve environmental licenses, ect.

Limitation and future research

The general limitations of this thesis provide anchors for future research. First, the geographical context of China limits the generalizability of the conclusions. The research related to each study across various countries would generalize our results in the future. Second, in a cross-sectional study, this thesis lacks a confirmation of cause-and-effect relationships between studied constructs, and reverse causality is a possibility. Thus, cross-sectional designing and using the self-reported data from single respondents encourage a longitudinal design and/or usage of data from more sources to avoid the potential measurement error of common method bias (CMB).

Specifically, some researchers insist that ties' utilization is in fact a dynamic process (Chen & Chen, 2004). This implies that a longitudinal study on the complex link of managerial PTs and PES need to be further investigated. Besides, drawing upon the evolutionary theory, future study related to first topic would probably offer a holistic picture of how the motivators of PES evolve over a certain period. Third, strategic formulation requires the involvement of managers at all levels (Mintzberg, 1990), the opinions from middle-level and front-line managers, therefore, is beneficial for our better understanding of each topic. Fourth, this study's results demonstrate the driving forces that positively influence firms' PES. However, the effects of barriers that hinder the PES development has gained little attention (Murillo-Luna, Garcés-Ayerbe, & Rivera-Torres, 2007). Future studies could examine the internal obstacles on the relationship between independent and dependent variables. For example, the simultaneous effects of managers' EA to promote PES and the existence of barriers that bring the difficulties in favoring PES need yet to be examined. Fifth, in terms of EO in the second study, EO could be also regarded as unidimensional construct that three dimensions co-exist. A greater progress can be made by regarding EO as a unidimensional construct. Moreover, we adopt the working experience between manager and government officials, the business leaders and politicians might be university classmates or friends (Yu & Zheng, 2019). As such, those subtle informal political connections could be measured in the future. Additionally, responding to the argument that PTs are a double-edged sword (Chen et al., 2017), in entailing both advantages and disadvantages (Sun, Mellahi, & Thun, 2010), the dark side of PTs utilization needs the further examination.

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Appendix 1. Interview Questions

1 How do you describe PES in business? or What is the meaning of PES in business?

2 Please describe the significance of PES in your organization.

3 What factors do you consider when making pro-environmental strategic decisions?

4 Please exemplify the determinants of PES in your organization.

Appendix 2. Invitation to Participate in Survey

Dear Mr. / Ms. _____,

I am sincerely asking for your help to complete a questionnaire. This survey is the culmination of my program for Doctorate at University of Liverpool, UK. The aim of this study is to investigate the “what factors lead firm’s embrace of proactive environmental strategy?” The empirical findings may benefit the top managers, the organizations, as well as policymakers.

Your participation is, of course, voluntary, and your reply will be anonymous. Any publication will present only results aggregated from all surveys, with no indication of individuals or firms. A summary of the results will be provided, at no cost, to all the participants who request it.

Your participation will be valuable and is greatly appreciated. We hope that it will help to understand the effective management of proactive environmental strategy. The questionnaire contains several questions where you check off choices that best agree with your preferences. It normally takes no more than 20 minutes for you to complete. Data will be collected using the Internet.

Thank you for taking the time to participate in the survey. Please feel free to ask questions regarding this study. My email address is **Zhiwei.yan@xjtlu.edu.cn**, and mobile phone is **13934149340**.

Sincerely yours,

Zhiwei Yan

Appendix 3. Informed Consent Form

Purpose:
This study is in accordance with the requirements of the University of Liverpool for the degree of Doctor in Philosophy for Zhiwei Yan, at University of Liverpool, UK.

Participation Requirements:
You are asked to complete a questionnaire about the environmental situation of your firms. The survey will take approximately 6-8 minutes to complete. The survey will begin when you provide informed consent.

Potential Risk/Discomfort:
There are no known risks in this study. Some of the answers provided for the survey may be personally sensitive. Your responses will remain anonymous. There is no anticipated risk or harm to you, your e-mail account, or your computer.

Potential Benefit:
There are no direct benefits to you for participating in this study. No direct financial compensation will be paid to participants. However, if you choose to participate and complete the survey, you may choose to obtain the research findings.

Anonymity/Confidentiality:
The data collected in this study and with the survey will remain confidential to the extent allowed by law. All data will be coded so that individual participants are not associated with specific data.

Right to Withdraw:
You have the right to withdraw from this survey at any time without penalty.

Research Panel:

If you have any questions, please contact:
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International Business School Suzhou (IBSS)
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Zhiwei Yan

Appendix 4. Questionnaire Survey

Part 1:

Basic Information and Company Profile

1) Gender □Male □Female

2) Position □Chairman □General Manager □Factory Director □CEO □Secretary

3) Political Status □Communist Party Member □League Member □Public People

4) You are □Deputy to National People's Congress □Member of the China People's Political Consultative Conference National Committee

5) Highest Education Degree □High School □Bachelor □Master □PhD □other

6) Do you have overseas studying or working experience? □Yes □No

7) Firm Size □Small □Middle-Sized □Large

8) Firm Ownership □POE □SOE □FIE □Joint Venture

9) Years of Operation □Less than 10 years □11-20 years □21-30 years □More than 30 years

10) Number of Employees □Less than 200 □201-500 □501-1000 □More than 1000

Part 2:

Items measuring environmental awareness

To what extent do you agree with the following statements? (1 = "strongly disagree", 7= "strongly agree")

1) Top management team pays much attention to adverse impacts of our firm's behavior on the natural environment.

□Strongly Disagree □Mostly Disagree □Somewhat Disagree □Neither Agree nor Disagree □Somewhat Agree □Mostly Agree □Strongly Agree

2) Top management team is very clear about how environmental legislation is relevant to our business.

□Strongly Disagree □Mostly Disagree □Somewhat Disagree □Neither Agree nor Disagree □Somewhat Agree □Mostly Agree □Strongly Agree

3) Top management team is very clear about what represents "best environmental practice" in our industry.

□Strongly Disagree □Mostly Disagree □Somewhat Disagree □Neither Agree nor Disagree □Somewhat Agree □Mostly Agree □Strongly Agree

4) Top management team thinks that adopting environmental initiatives can improve sales revenue.

□Strongly Disagree □Mostly Disagree □Somewhat Disagree □Neither Agree nor Disagree □Somewhat Agree □Mostly Agree □Strongly Agree

5) Top management team thinks that adopting environmental initiatives can reduce costs.

□Strongly Disagree □Mostly Disagree □Somewhat Disagree □Neither Agree nor Disagree □Somewhat Agree □Mostly Agree □Strongly Agree

6) Top management team thinks that adopting environmental initiatives can improve production efficiency.

□Strongly Disagree □Mostly Disagree □Somewhat Disagree □Neither Agree nor Disagree □Somewhat Agree □Mostly Agree □Strongly Agree

Items measuring entrepreneurial orientation

To what extent do you agree with the following statements? (1 = "strongly disagree", 7= "strongly agree")

1) In general, our firm favors a strong emphasis on R&D, technology leadership and innovations.

□Strongly Disagree □Mostly Disagree □Somewhat Disagree □Neither Agree nor Disagree □Somewhat Agree □Mostly Agree □Strongly Agree

2) Our firm favors "tried-and-true" procedures, systems, and methods.

□Strongly Disagree □Mostly Disagree □Somewhat Disagree □Neither Agree nor Disagree □Somewhat Agree □Mostly Agree □Strongly Agree

3) Our firm is willing to try new ways of doing things and seeks unusual, novel solutions.

□Strongly Disagree □Mostly Disagree □Somewhat Disagree □Neither Agree nor Disagree □Somewhat Agree □Mostly Agree □Strongly Agree

4) Our firm is among the first in the industry to introduce new products or services.

□Strongly Disagree □Mostly Disagree □Somewhat Disagree □Neither Agree nor Disagree □Somewhat Agree □Mostly Agree □Strongly Agree

5) Our firm is the first to initiate actions to competitors, for which the competitors then respond.

□Strongly Disagree □Mostly Disagree □Somewhat Disagree □Neither Agree nor Disagree □Somewhat Agree □Mostly Agree □Strongly Agree

6) Under uncertainty, our firm always adopts an adventurous and active attitude.

□Strongly Disagree □Mostly Disagree □Somewhat Disagree □Neither Agree nor Disagree □Somewhat Agree □Mostly Agree □Strongly Agree

7) Our firm strongly prefers high-risk projects (with chances of very high return).

□Strongly Disagree □Mostly Disagree □Somewhat Disagree □Neither Agree nor Disagree □Somewhat Agree □Mostly Agree □Strongly Agree

8) Because of the nature of the environment, our firm always takes bold, wide-ranging strategic actions rather than making minor tactical changes

□Strongly Disagree □Mostly Disagree □Somewhat Disagree □Neither Agree nor Disagree

□Somewhat Agree □Mostly Agree □Strongly Agree

9) When confronted with decisions involving uncertainty, our firm always adopts a bold posture to maximize the probability of exploiting opportunities

□Strongly Disagree □Mostly Disagree □Somewhat Disagree □Neither Agree nor Disagree

□Somewhat Agree □Mostly Agree □Strongly Agree

Items measuring proactive environmental strategy

To what extent do you agree with the following statements regarding your firm's environmental practice? (1 = "strongly disagree", 7= "strongly agree")

1) Enterprises will strictly implement cleaner production even without external supervision.

□Strongly Disagree □Mostly Disagree □Somewhat Disagree □Neither Agree nor Disagree

□Somewhat Agree □Mostly Agree □Strongly Agree

2) Outlook on green development has incorporated into enterprise culture.

□Strongly Disagree □Mostly Disagree □Somewhat Disagree □Neither Agree nor Disagree

□Somewhat Agree □Mostly Agree □Strongly Agree

3) Enterprises input a large quantity of resources in development of environmental protection technologies.

□Strongly Disagree □Mostly Disagree □Somewhat Disagree □Neither Agree nor Disagree

□Somewhat Agree □Mostly Agree □Strongly Agree

Items measuring political ties

To what extent do you agree with the following statements? (1 = "strongly disagree", 7= "strongly agree")

1) Top managers at our firm have maintained good personal relationships with officials in various levels of government.

□Strongly Disagree □Mostly Disagree □Somewhat Disagree □Neither Agree nor Disagree

□Somewhat Agree □Mostly Agree □Strongly Agree

2) Top managers at our firm have developed good personal or social ties with officials in industrial administrative departments in charge.

□Strongly Disagree □Mostly Disagree □Somewhat Disagree □Neither Agree nor Disagree

□Somewhat Agree □Mostly Agree □Strongly Agree

3) Top managers at our firm have developed good connections with officials in regulatory and supporting organizations such as tax bureaus, state banks, and commercial administration bureaus.

□Strongly Disagree □Mostly Disagree □Somewhat Disagree □Neither Agree nor Disagree

□Somewhat Agree □Mostly Agree □Strongly Agree